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Information Processing
Actual Research Problems in Eastern Europe

edited by
Grzegorz Kozieł

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Internal control in the system of standards and regulations of the international and Ukrainian legal framework

In this article the system of the normative legal documents regarding internal control regulation on the international level and in Ukraine is covered.

Here were analysed via comparison the key conceptions in the internal control regulation sphere. In this article was proposed the scheme of the levels of the internal control regulation in the Ukraine and in compliance with them – classification of the legal monitoring provision acts.

1.1. INTRODUCTION

Necessity of the internal control is determined by historical development of humanity. The systemacity of this concept was starting to appear in the early of the XX century with the separation of the three elements: division of powers, rotation of staff, usage and analysing of the records. Within developing of the economic relations system the enlargement of the functions of the internal control was marked, which aimed to save the assets, to check the safety of the accounting information, to increase of the operation efficiency, to comply a proposed policy and company procedures. The internal control is not strictly restricted and connected only with bookkeeping. Its functions comprise the all facts of the commercial life. As the bookkeeping fixes these facts in the accounting system and records, herein appears their interrelationship. In the age of the crisis the problem of the proved accounting and analytical information formation becomes more and more actual. Summing up what has been said in XXI century an internal control became the instrument of control over the risks, which means that its functions are closely intertwined with the function of the risk management. This causes the necessity of covering a wide area of activities with control. Not only should the economic aspects of organization be controlled. Also other areas should be taken under consideration, for example: IT solutions, employing a new personnel, changes in operational environment, employing a new information technology, introducing new business models and products or activities, corporate restructurings and other.

The regulation of the internal control is closely related with historical stages in the system of commercial relations. The world tendencies of the general economic develop-

ment influence on Ukrainian economy though it is known that the separate processes in Ukraine are well after marked than in the other developed countries of the world. But it doesn't confirm that the system of the Ukrainian business control doesn't develop.

The questions of the internal control and its organization on the level of the separate business-processes are the research topics of a huge range of the scientists both in the world and in Ukraine. However our aim is the research of the key standards and regulations, which regulate the questions of the organization and functioning of an internal control at the world level and opportunities of these conceptions implementing in commercial practice of the Ukrainian companies.

The second aspect of introducing internal control in various organizations is the appropriate set of IT instrumentalities. Without appropriate tools the implementation of efficient control system is impossible. There is a big number of various aspects that are not possible to control by hand. Only IT systems usage allows for a high level of control.

1.2. COSO MODEL

The year 1985 is generally thought to be beginning of the modern stage of the key requirements for internal control organization when in the USA with the participation of self-regulated organizations as AICPA (American Institute of Certified Public Accountants), American Accounting Association, FEI (Financial Executives Institute), Institute of Internal Auditors, IIA, Institute of Management Accountants, - the National Commission on Fraudulent Financial Reporting – The Treadway commission was created. They drafted a report contained proclivity to the Treadway commission sponsors to join forces for the purpose of reaching arrangements regarding the definition – internal control. The working group studied and analyzed the literature on internal control and as a result was preparing a document - Internal Control - Integrated Framework. In a world practice this document is generally thought to be the COSO model or just COSO.

In Ukraine an active appliance of the COSO model started within several last years what connected with strengthening of the globalization processes in the economy. It's known that Ukraine was a part of USSR with its planning and administrative economy that influenced on the control processes entirely.

In an age of the Soviet Union a legal regulation of the internal control was totally-forced in other words then was created set of rules regulating the whole aspects of the organization activity without providing with a right to back out determined standards, even if it's unintentionally. For each transgression was demonstrative punishment. In case if to consider the common regulation approach, it seems that set of rules and exact instructions are a positive occurrence, but the weak pockets remain such as simplicity and formality of these inspections, difficulties in the process of weak pockets detection in the business-processes system, the concentration of the control actions in the hand of a one authority or even a person, that leads to bureaucratization of the current process and its inactivity in an age of the new risks and dangers.

In summary, as the reaction on the total control system appears radically new control conception which is oriented on the risks – COSO model. Thuswise in the conceptual construct of the internal control appear definitions such as "risks" and "opportunities".

In the conception of internal control which is oriented on the risks here as a standard is risk level which is acceptable for a company, the checking of other risk levels takes place constantly and is the part of the key activity of the company but in the case of detection the deviation from the standard level here will be corrected that particular business-process the control of which provides for moderation of a such risk influence. Therefore the exercising of the separate kinds of control is not necessary to concentrate in the hand of the one department. It's enough to differentiate a responsibility between separate departments, in other words to include in the list of their functions the separate actions regarding exercising of the control functions.

According to COSO model the internal control – is a process which exercises by supreme company body, specifies its policy, by its top management and other employees. Herewith there are separate component parts of the internal control system: control environment, risk assessment, control, gathering and analyzing of information and its transferring for its intended purpose, monitoring.

Parallely in 1991 (in 1994 were amendments) were also issued the results of the research of the Research Foundation of the internal auditors Institute «Systems Audit and Control» (SAC). The key conception of this document is the support proposition to internal auditors with respect to the control and audit of the information systems and technologies issues, in other words here is considered in details the influence of different aspects of the information technologies on the system internal control facilities.

The internal control assessment issues hold meaning within internal process audit, that's why the important stage in the process of establishment of the internal control regulation, its organization and efficiency assessment is the consideration of these issues in the system of legal documents on audit activities regulation. Thuswise an American institute of the certified accountants adopted SAS 55 (year 1986) and SAS 78 (year 1995) where the key moments regarding internal control influence on the planning of the audit of the financial records are stipulated.An internal control is considered as the assembly of the key five elements according to COSO model, the attention is being called to synergies between instruments of control and controlling risk.

The next stage of the internal control system regulation developing in the world can be reputed the determination of the internal control in the recommendation on requirements drafting in the Code of commercial management which were issued by London Stock Exchange in 1992. This definition was identical with that which was in the COSO model. This became a beginning in the Great Britain of the listed companies work on the analyzing of the internal financial control efficiency. The result of improving on the assessment of the internal control system efficiency was issuing in 1998 of the Combined Code on Corporate Governance (Combined Code), where the mandatory condition became the requirement on checking and report drafting on the whole three types of control, which are in the COSO model.

The separation of this stage in the regulation system of internal control first and foremost is connected with the mandatory of such recommendation for appliance by quite a number of the companies, the shares of which were represented on a particular country stock market. These companies could be not only British but also from other countries of the world what was a stimulus for outspreading COSO model and internal control consideration from a point of a mandatory appliance.

The tendencies of internal control conceptions development started to outspread from Europe on the other developed countries of the world and other continents, as the result in 1995 the Recommendations on control were issued by the Criteria of Control Board (CoCo) from Canada Institute of Chartered Accountants. In compliance with COSO principles than were drafted 20 criteria of the control efficiency.

The tendencies on legal regulation development in the sphere of internal control also outspreaded to a South. In 1995 the Standards on risk management of Australia and New Zealand were issued (ANZ Risk Management Standard), which were reconsidered and reissued in 2004. These Standards are closely related with risk-management.

1.3. COBIT

In an age of integration and globalization simultaneously increases the role of information resource. Information becomes an important factor in the process of any system functioning, in particular internal control system. Information security of a business today is key item in supporting of a continuous work and sustained development. The control supporting over such resource also becomes one of the necessary conditions and practice requirements. COBIT, Control Objectives for Information and Related Technology, published in 1996 became a first attempt on the international level to specify the Standards of control and security in the sphere of information technologies.

COBIT is a standard created by ISACA – an international professional association focused on IT Governance. This standard was designed for information technology management and IT governance. It includes a set of tools for bridging the gap between control requirements, technical issues and business risks. The first version of COBIT was issued in 1996. Nowadays this standard is developed to version 5, which was issued in 2012. It defines a set of processes to manage IT. Each process definition covers also its inputs, outputs, key process activities, performance measures, process objectives and an elementary maturity model. COBIT contains a few components:

- Framework – used to organize IT governance objectives, define good practices with IT processes. Framework allows for linking IT with business requirements.
- Control objectives – designed for effective control all IT processes. It contains a set of requirements that should be applied during IT control.
- Management guidelines – A set of guidelines that are helpful while assigning the responsibility, agreeing the objectives, measuring performance and mapping connections with other processes.
- Process descriptions – contains common language and reference process model for all organization's members.
- Maturity models – models used for assessing maturity of various processes and reducing gaps between them.

1.4. INTERNAL CONTROL

Very important in development of the internal control regulation on the European Union territory, USA and other countries are Basel Committee publications. Mainly such publications are related to assessment of the internal control in the financial institutions and

banks. Nevertheless analysing process of the world-wide tendencies of the internal control regulation it's important to pay attention on such documents.

The European integration processes in the Ukrainian banking sector grow rapidly. This demands a highest possible realization of the requirements of Basel Committee which were envisaged by the National Bank of Ukraine to implement gradually [8].

The early XXI century in the world-regulation system of internal control was marked as active process of new laws drafting, standards and rules. On the one hand it took place under influence of further globalization, and on the other – world terrorism dangers, ecological catastrophes and bankruptcies of the international companies.

The adoption of the Sarbanes-Oxley Act, SOX was a reaction to a number of scandals which were connected with providing with uncertain financial records by top-management. This legal act contains requirements regarding the companies represented on the American stock markets. This legal act contains a separate article concerning requirements and internal control assessment, in particular here is marked the responsibility of the company's management for organization of internal control on financial records drafting. In such a manner it's envisaged that a company's management is legally binding to support a reasonable assurances of prevention or early recognition the occurrences of illegal purchase, usage or asset flow of this company, what can influence on financial records indicators.

The execution of the Sarbanes-Oxley Act requirements becomes an integral part of the common corporate policy and in particular – internal control policy for a number of Ukrainian companies. First and foremost it's connected with intention of a number of them to attract investments when companies decide to IPO. Among the agro-companies this way of investment attracting is very popular. In particular a French company Agro-Generation which has assets in Ukraine decided to IPO on American NYSE Alternext. Early 2010 it was organized partially underwriting on the NYSE Euronext stock market. Accordingly in order to organize such a procedure here was one of the conditions – compliance with the requirements of the Sarbanes-Oxley Act.

In 2004 under influence of the globalization world processes and outspread of the terrorism, ecological and economical dangers the further development of internal control conceptions takes place, as a result the Enterprise Risk Management Framework were issued. This publication was expanded in comparison with previous which were published in 1992 and 1994. Confidence restoration to financial markets and in particular to financial records indicators on the part of investors became a motivation to adopt in USA Sarbanes-Oxley Act. In the Europe in 2006 the Eight Directive was adopted which became in large measure the analogue of an American document. These legal acts on the international level lay the basis for creation of the corporate management system which could be compared on the business establishment country. The responsibility of the auditor committees on risk management and internal control system is stipulated.

No less important system of rules is International Standards on quality control, audit, overview, other supporting of the confidence and related services (International Standards on Auditing (ISA)). In Ukraine these Standards are adapted in full measure as the national that confirms the integration of the domestic audit. Accordingly the key provisions are in order to regulate and coordinate the actions of the outside auditor. The issues of the internal control and its assessment are important in the process of auditor

procedures planning and formation the conclusion on veracity of the financial record indicators that leaded to its consideration in the system of these Standards.

In such a manner the considered key documents is impossible to assess uniquely regarding their importance, significance and influence on the definition and assessment of the internal audit. Therefore we compared these conceptions of control with defined criteria. Comparison presented in table 1.1 was drafted pursuant to [1].

Thus, by comparison some conclusions were made, which are as follows. All of the concepts, standards and regulations have much in common. Some provisions of the earlier formed the basis for the establishment and formation of the new ones. The fundamental point, which distinguishes them from each other, is the target audience, i.e. the main users of a given document. At the same time, have their differences in the main emphasis, in other word on what is highlighted, due to the fact that some of them are focusing on information technology (COBIT, SAC), as an increase in the importance of this resource for the internal control system and the functioning of the enterprise.

The development of each of these documents has primarily pursued a definite goal, which has not always been an integral and comprehensive, therefore, not always the whole range of issues that existed in reality were solved.

On the management of the internal control in Ukraine, in our country there is no single approach or a common concept about the subject. At the initial stage of market economy in Ukraine at the national level on the control tried to create a legal and regulatory framework, which would give the economy an opportunity to exercise self-regulation that is, trying to limit government intervention. In general, government policy has moved away from the concept of total control, but at the same time and not created a single with its own rules and principles. And consequently, it had an impact on approaches to control at the enterprise level, which resulted in a voluntary decision on the issue of business owners or managers.

Thus, the normative regulation of internal control for today focuses on its core areas: independent external audit, accounting controls, monitoring the actions of audit committees, state financial control, etc. The practice of business entities in Ukraine shows that the current regulations specify only the order of the inventory, note the rights and duties of inventory commissions and supervisory boards. Issues of legal regulation of internal control in the business is quite topical and of great practical importance, as the internal control is an integral part of farm machinery and components of the system of internal corporate governance and risk management systems. The regulated community should be clearly informed about their role and participation in the monitoring process, which leads to the regulation not only at national level but also at the level of the individual entity.

Thus, regulation of internal control in Ukraine is currently in its infancy and the formation of a common conceptual approach regarding the issue. Development and adoption of regulations implemented at the level of legislative bodies. However, an important role in this process, and other authorities, including the National Commission on Securities and Stock Market, the National Bank of Ukraine, the Ukrainian Chamber of Auditors etc. Evidence of active work in the direction of regulation of internal control in Ukraine is the adoption of the Concept of development of public internal financial control, the regulations on the organization of internal audit in the commercial banks of

Ukraine, the Guidelines on the Application of internal audit in banks of Ukraine, the Code of Ethics of Internal Auditors of banks, internal standards audit departments and agencies, the Code of Ethics of the internal audit personnel, guidelines for conducting internal audit of financial institutions, the procedures for internal audit in the State Service for Financial Monitoring of Ukraine, termbase internal control and audit of the State Treasury. Submitted to the Verkhovna Rada of Ukraine the draft Law "On Internal Audit", which applies to the activities of the Cabinet of Ministers of Ukraine ministries and other central bodies of executive power and their territorial bodies, public institutions that belong to the management of the ministries and other central bodies of executive power, organs of the state social insurance and pensions, and their subordinate organizations and institutions as well as businesses based on state ownership, as well as banks. These were developed and approved regulations generally govern the procedure for conducting internal audits of certain state agencies and private entities. However, without the attention it was still common approaches to the organization, not only the internal audit and control in general. Thus, the analysis of the existing legal and regulatory framework has allowed for generating model adjustment levels of internal control and evaluation of its efficiency (figure 1.1).

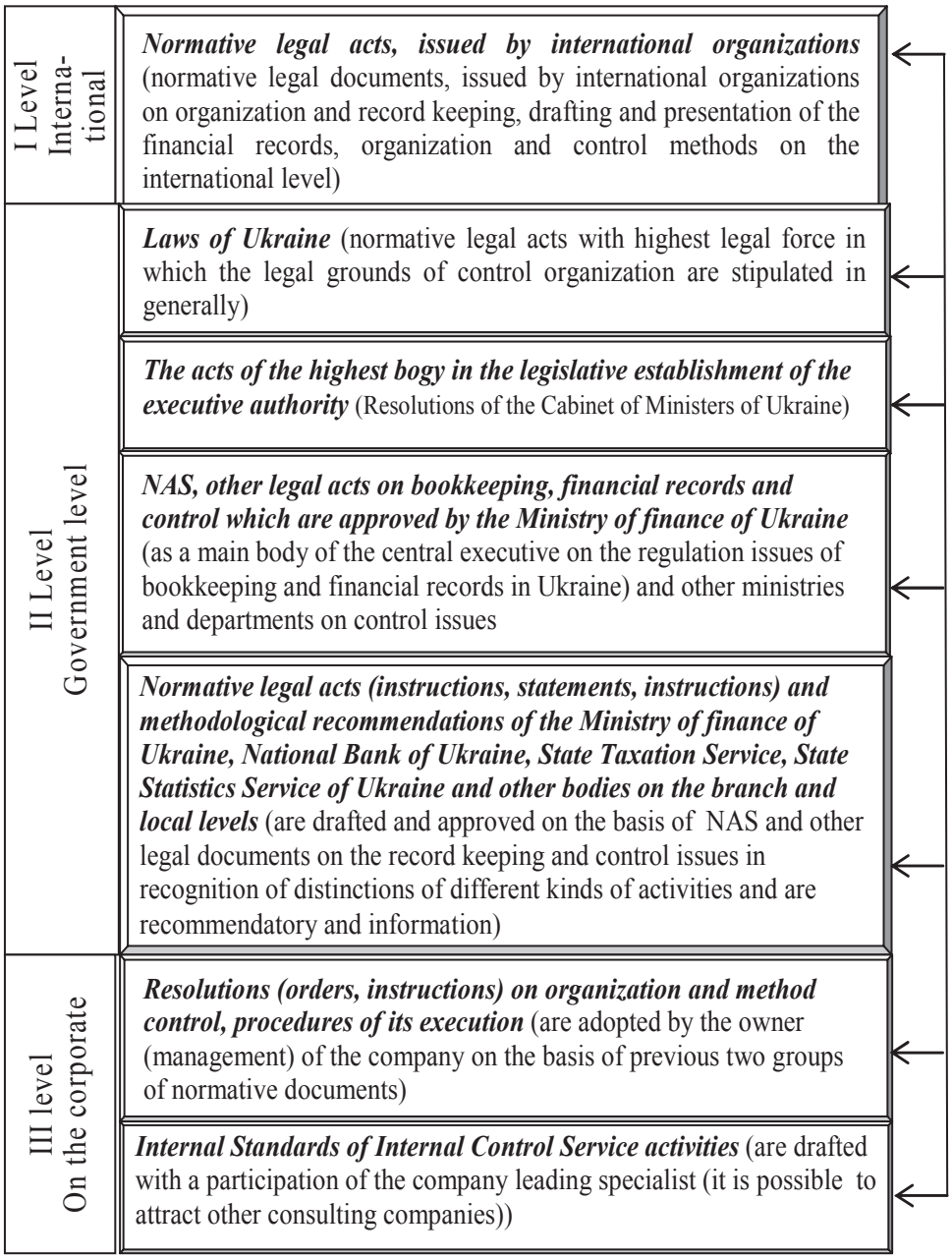

Fig. 1.1. Classification of the legal supporting of a control in Ukraine [own work]

Table 1.1. Comparison of the key conceptions in the internal control regulation sphere [own work]

COSO-ERM	SAC	COBIT	SAS 55/78	Sarbanes-Oxley Act (Sect. 404)	Directive 2006/43/EC	ISA (ISA 265, 315, 330)
Definition of the internal control system						
The process is provided by the company Board of Directors, by management, exists for supporting of the guarantee – the reaching of the goals	Complex of the processes, functions, actions, sub-systems and people, combined together or separate; destined to support the effective reaching of the purpose and intent	Provisions, procedures, methods and organizing structures developed in order to support the business goals will be reached, undesirable occurrences will be prevented, detected and corrected	The process is provided by the company Board of Directors, by management, other staff, exists for supporting of the guarantee – the reaching of the goals	The process on financial records drafting via information technologies applying for financial records quality supporting and defining of the company ranking score	The process is provided under supervision of the company top management and auditors, destined for creation of a strong and equitable in the international caliber - corporate management system	The process developed, entered and supported by the authorized persons with high powers, by management as well as other employees for supporting of the confidence in reaching the goals of business entity regarding the veracity of financial records, efficiency and productivity of the activity as well as applicable legislation
Key information users of such resource						
Management	Internal auditors	Management, auditors (information systems), other users	Outside auditors	Top-management of the issuer, internal auditors, independent audit firms	Top-management, auditors, investors	Outside auditors
Key orientability of the internal control						
Organization in whole	Information systems	Information systems	Financial records	Financial records	Financial records	Financial records
Organization goals of the internal control						
Operations efficiency and productivity Compliance with principles and rules of the financial records drafting Safety of the financial records	Supporting of the information unity Supporting of the compliance with stipulated requirements Supporting of the confidence level	Information efficiency Practicability, entirety and information availability Safety and information legality Information confidentiality	Safety of the financial records Efficiency and practicability of information Compliance with the relevant legislation	Supporting of the process efficiency in financial records drafting Practicability, entirety and information availability Functioning with IT participation The warning if swindle	Control of the process of preparation financial records Improving of the quality of yearly records, rising its safety and veracity	An internal control creates, implements and kept to react on detected business-risks Assessment of the risks of material misstatement in consequence of swindle or a mistake on the financial record level

Table 1 (continuation)

Main accents						
Considers the internal control system as the instrument of management	Accent makes on risks assessment, comparison of the costs and control results	Attention directed on the role and IT control influence, has signify-cant influence on busi-ness-process. The structure of control is available for an own-er of business-process	Accent makes on control facilities, which influence on financial records safety	It's allowed to use structural principles ICS according to COSO model or COBIT as a source of data regarding con-trolling procedures and control methods in the IT sphere	Accent makes on control facilities, which influence on safety and veracity of the financial records	Responsibility of the auditor for identification and assessment of the risks of material mis-statement of financial records via company understanding, its envi-ronment and internal control
Elements of the internal control system						
Internal context goal setting event definition risk assessment reaction on a risk control facilities information and communication monitoring	Control environment automatic and hand control system control procedures	Planning and organization purchase and implementation delivering and supporting monitoring	Control environment risk assessment actions on control providing information and communication monitoring	Control environment risk assessment actions on control providing information and communication monitoring	-	Control environment risk assessment process of the company informa-tional system inter alia connected business-processes, apposite for financial records and information support control measures are apposite for audit control measures audit
Efficiency assessment of the internal control system						
The report on defects provides to responsible person and management ICS is considered as effective if all the components func-tion according to stipulated requirements It's under way as of the determined moment	Supporting of the ICS adequacy, data integrity, effective using resources Coordination of the cooperation with outside auditors It's under way for the determined period of time	It is conducted the grouping of the process-es with the components which are the responsi-bility zones It's under way for the determined period of time	ICS is considered as effective if all the components function according to stipulated requirements. Outside auditors provide with the report on ICS defects influencing on the records It's under way for the determined period of time	Assessment should include the disclosure of information on ICS defects Management should give a positive ICS assessment in the presence of one or more defect in its functioning It's under way for the deter-mined period of time	The auditor committee is appointed which monitor the efficiency of the control system It's under way for the determined period of time	A system of internal control is considered as effective if it can prevent the occurrence of the unreliable information timely, as well as detect such information. The presence of the ICS at the company doesn't mean it's efficient and functioning normally Auditors the order and the assessment method independently

1.5. SUMMARY

If the level of international and government should be clearly defined, the organization controls at the entity is a matter of the owner of the business, because of its needs and potential risks. Thus, this process should take place within the legislative field simultaneously with the formation of a separate system of internal standards and procedures for the control of certain business processes. This is important when taking into account risks and building control so that their time to identify and eliminate or even prevented by the implementation of individual actions and procedures. Overall, therefore, the organization of internal control at the enterprise level can be focused on the following key areas: strategy development of internal control, internal control principles, targets and areas of internal control, the architecture of the system of internal control. These areas define further the formation of a separate provision of the internal control system, the development of internal control procedures, job descriptions, etc.

So, the issues of the internal control regulations - is not only a system of regulatory support at the state level, first and foremost is a field for activities within the individual entities. World practice contains a number of documents on the organization, methodology and assessments of internal control. So today in the construction of the Ukrainian system of internal control on domestic enterprises it's necessary to consider both an international experience, and particular qualities of economic relations in our country.

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2

Convergence of accounting information in management of sustainable development

In the article the possibility of combining environmental and economical accounting is presented. The discovery of new objects for account, study and development of the directions of its research are discussed too. Actual trends and activities taken in European Union in the environment protection domain are presented in the article.

2.1. INTRODUCTION

Nature is a natural basis for the existence of society. However, the main factor in person's life are economic activities which are incentived by social needs. Growing of needs expands the scope of nature transformation. The present stage of society development feature is the efficiency of its development which is mainly determined by lack of the resources and implementation of environment protection measures. Therefore systematic approach is very important for understanding the nature, accounting of social mechanisms of the relationship between human society and environment, with emphasis on man as a species. It`s understanding requires radical restructuring of economic activity, and it is possible only due to the environmental assessment. On the one hand the last one has to represent ecological expertise of human actions in the implementation of all kinds of economic activities and on the other hand receiving of the economic effect.

The very important in convergence are technical solutions. Raising the level of technical equipment boosts the convergence tempo. Especially IT solutions apply has positive influence on the processes development.

Environmental problems are one of the leading among the global. Problems are considered as the global if they are global in nature, its failure to settle causes a threat to humanity existence, requires immediate coordinated actions by the world community[1].

Environmental problem is a kind of “litmus test” which fixes changes in medium. V.A. Los` said efficiency in solution of current socio-environmental conflicts was an indicator of the “health” or “disease” of civilization [6].

Issues of the ratio between economics and ecology`s interests had been studied by A. Gor, V.M. Djyk [3], G.G. Kireytsev [5], V.A Luk'yanihin, L. Maximov, L.G. Melnik, J.M. Mayer, N.V. Maslov, V.D. Paradjanov, N.P. Petrushenko, S.A. Podolinsky, J.E. Rauch, R. Repetto, M.D. Rudenko, A. Filipchenko, V.O. Shevchuk [16].

The issue of sustainable development had been raised by O.O. Veklich, B.M. Danylyshyn, V.K. Danilko, S.I. Dorohuntsov, V.M. Djyk [4] L.G. Melkik, P.G. Oldak, V.M. Tregobchuk, A.D. Ursul, M.K. Shapochka, V.O. Shevchuk [17], V.Y. Shevchuk. This indicates the formation of fundamental understanding of the need to ensure the achievement of sustainable development, but there is no of implementation mechanisms.

The purpose of article is to show the possibility of combining environmental and economical accounting and to discover new accounting objects, study and develop the possible directions of its research.

2.2. ECOLOGIZATION OF THE SCIENCE

In the modern set of nature and society sciences it is difficult to find scope of knowledge that would have avoided the impact of environmental ideas, concepts and theories. This process is called ecologization of the science. In recent years, environmental issues and ecological policy rather firmly entrenched inside lexicons of scientists, politicians and practitioners. These issues displace concepts such as "protection of nature", "environmental protection", "environmental activities". However, authors have various interpretations of concepts and goals that they relate to environmental policy.

Under the country activity, in the environmental sphere I.M.Synyakevych understand "the principles and tools used by national and supranational governmental bodies, political parties and civil society organizations to advocate the interests of the world community or certain groups of population in reproduction, use and conservation of natural resources and the environment "[14]. State environmental policy according to M.F. Reimers is a "social economic policy, including international, based on understanding of pros and coins which are associated with the environmental condition of the country" [12]. A. Enders interprets environmental policy as a "a system of measures that have to ensure the quality of the environment, restoration of natural resources and creating the appropriate environmental conditions for living" [18]. V.H.Sahayev and V.Ya.Shevchuk understand environmental policies as the "development of priorities for the future, taking into account health and increase life expectancy, reproduction of flora and fauna, preservation of environmental, genetic and material basis, natural heritage and culture "[13].

In our opinion the principal drawback of these definitions is that they have a system action on environmental safety considered in the abstract, isolated from an understanding of the economy and economic policy as a purposeful activity of the authorities in a manner to ensure the realization of the public interest. Thus, the activities of the state in ecology domain can be represented as a complex system of goals and actions of the government and management of the economy and the environment to ensure environmental needs of the population and environmental security on the one hand, and to obtain maximum economic benefits with minimal environmental losses on the other. At the same time by V.A. Luk'yanyhin and N.N. Petrushko "Ecology or science of the house", about relationship of organisms with the environment are closely intertwined with economy – the science about house and organisms and about links in the environment. The affinity of these sciences is described at their interpretation, which was the cause of such phrases as "ecological-economic", "economic and environmental" and others. "[2]

In the concept of sustainable development the requirement of equitable distribution of wealth between generations is declared. It is a stimulus for further development of economic thought. Daily G.E. [19] notes that sustainable development requires substantial changes in economic thought and policy. The author proposes to abandon the understanding of the economy just as circulation of goods and income, but also take into account the material and energy flow, which revealed that the economy is completely dependent subsystem of the natural system. The maximum size of the economy is limited by the parent natural system. Economic growth under these conditions is ensured only by using of previously unused nature features that will provide sustainability of this growth.

The main goal of sustainable development, according to L.G. Melnick and M.K. Shapochka [8], is recognizing of conventionally infinite existence of human civilization and its progressive development. The aim has two levels of measurement, or two levels of objectives:

1. required – the physical survival of the human biological,
2. sufficient – the spiritual development of human social. Both levels are essential, although it is not always immediately possible to realize.

2.3. SUSTAINABLE DEVELOPMENT OF HUMAN CIVILIZATION

According to O.A. Subbotin`s research [15] there are only two possible directions of sustainable development of human civilization.

The concept of sustainable development has three components: environmental, economic and social. The economic component of concept sustainable development provides optimal use of limited resources and implementation of environmental (nature, energy and material saving) technologies, including the development of environmentally acceptable products, minimization, recycling and disposal of waste. The essence of the economic component is to ensure sustainable use of natural capital.

Accounting as an informational system that provides informational formation about natural capital of society is one of the economic component`s tools. An accounting fixes business transactions of enterprise that are made using natural resources or lead to environmental impacts.

L.G. Melkin convinced that „economical ecologization is a purposeful process of economy`s transformation, which was oriented under the reducing of integral ekodestructive impact to the processes of production and consumption of goods and services per unit of gross national product" [9]. The scientist emphasized that "ecologization carried through the system of organizational measures, innovative processes, restructuring of the production sphere and consumer`s demand, technological conversion, rational using of nature, transformation of environmental activities, which are undertaken both on macro- and microeconomic levels" [9].

It becomes clear that the science "economy" is imperfect because it does not "see" the environmental problems and does not know what to do with them. As the V.D. Parondzhanov, checked "the current state`s illogic is obvious. Modern world economic system methodically hurts our planet, based on irrational decision prompted by outdated economic theory "[10].

Links of ecology and economy manifests through economic functions of nature, which are the basis for the economic evaluation of environmental factors. Among the economic functions of nature the most obvious are those that provide needs of industrial environment, they can be conventionally grouped into three main groups:

1. Satisfaction of the resource`s needs: material, energy, information, communication, reduction;
2. Formation of conditions for the reproduction of physiological capabilities of human as a labour resources;
3. Formation of conditions for the reproduction of personal property rights as human resources.

Thus, the first subgroup of economic functions related with environmental features of nature. The second and third subgroups related with physiological and social needs of man and, therefore, with relevant features of nature. This dependence creates a relationship between physiological, social and environmental features of nature on the one hand, and economic functions on the other [8].

2.4. REGULATIONS IN UKRAINE

"The Main Directions of State Policy of Ukraine in Environmental Protection, Using of Natural Resources and Environmental Safety Industry " [11] defines three levels of management: national, regional and local. Separately for each level provides creation of economic mechanism of environmental using, development of methodological and normative methodical and legal support. However, in the works of contemporary authors we can not find clear directions of economic mechanism of environmental using and methodological approaches to a database for its construction. Also at the current stage we can ascertain market`s failure in environmental impacts` regulation.

An indicator of the social product is the main indicator of the national economy, which has recently taken centre stage in economic science and its theory, methodology and practice. However, it is important to understand what kind of information you still can not take from the GDP. Gross Domestic Product as an economic category is important only because of information about size of the economic system and results of enterprise`s operations, but GDP is not and cannot be used as a measure of the level of social life, because:

- does not include some indicators of well-being that are not elements of the social product, including the status and development of human capital;
- does not reflect the distribution of income and economic benefits among the population;
- does not include damage caused into environment during production, and, as a result, of the population`s health;
- equally evaluates production of useful and harmful for society goods (such as drugs and cigarettes), at the same time, ignoring the value of spare human`s time.
- These shortcomings cast doubt on using of GDP as an indicator of reproduction of biological potential that was necessary in the evolution of macroeconomic indicators in the context of sustainable development.

N.M. Malyuha noted "this situation can be partly explained by the fact that economic sciences were unprepared for acceptation of new researching object because of the lack of theoretical foundation" [7]. Accounting in the middle of XX century (in Soviet times) could not bring to their objects the effects of human impacts on the environment because of following reasons:

- lack of interest from enterprise`s owner in mapping of the object;
- lack of interest from users of information about the object;
- lack of responsibility for ignoring the impact on the environment;
- lack of legal and normative environmental preservation of the environmental activities` subject.

At that time accounting clearly regulated displaying of objects that could potentially pollute the environment. Now we can say that the environment can not be an endless source of resources and wealth. Inexhaustible resource does not exist, the consumption almost of all kinds of resources is limited by environmental factors or economic order. The natural environment can not be only the external environment of human activity; it is a part of the overall system "society - nature" and humanity, also is a part of nature. Thus, social and ecological relationships are intertwined and modern ecological crisis should be seen as a social and economic crisis.

Value of accounting and statistics as the main informational management base of reproduction of biological resources` potential is already manifested in the early stages of development and implementation of national strategies for sustainable development. Necessity of information about available resources that can be used in the process of socio-economic reproduction creates query to accounting and statistics about the composition of existing assets, and at the macro level considers as elements of national wealth. Reflection in accounting and enterprise`s reporting of such information is the response to the query. Its construction at the macroeconomic level is the basis for a decision making about using of national wealth in the process of socio-economic reproduction. Formation of information about national wealth using in reproductive cycle occurs in the accounting system in reflection`s form of the facts of enterprise`s economic life. First of all, it concerns the peculiarities of the accounting and its components.

Table 2.1 shows the results of the SWOT analysis of prospects for further statistical system development. It make a possibility to assert that natural resources will be included in the accounting system either to ensure a more reliable statistical database for economic analysis or for modernization measures of national wealth.

In our opinion, state should take either environmental or indirectly through economic leverage influence to the economic system at whole, as well as ecological and economic subsystems are interconnected and make the ecological-economic system. That is why it is necessary to consider the perspective on the environment by two types of accounting: environmental and economic.

Table 2.1. Strengths and Weaknesses of Internal Environment [own work]

Strengths	Weaknesses
• commitment to implementing international standards in statistical practice; • technical upgrading of the state statistics bodies; • modernization of collection and dissemination of data through modern ICT; • development of statistical infrastructure, in particular the statistical registry that will facilitate the spreading of selective methods of observation and optimization of information flows in general; • using of statistical samples, which will allow to reduce costs and reporting burden on respondents and increase the value of statistics; • the desire of the statistical staff to study, creatively apply the best statistical practices and share experience; • appropriate level of education and motivated statistical potential; • organizational infrastructure of centralized statistics divisions around the country; • interaction of statistics divisions with main respondents and users; • scientific and research institute of statistics (STC of statistical researches) and collaboration with a science.	• insufficient popularization of the State Statistics Committee as a body of official statistics; • shortage of highly qualified and analytical personnel particularly at the regional level; • poor level of computer data systems devlopment; • methodological and organizational autonomy of observations which causes many problems with data integration; • insufficient implementation of sampling methods of data collection that leads to dissatisfaction of respondents because of the excessive reporting burden; • traditional (irrelevant) methods of questionnaires' development • poor level of ICT competence of statistical staff who doesn't have sufficient access to various networks (Internet, etc.); • low level of foreign language proficiency which does not allow statistical staff to process international statistical documents efficiently.

From an environmental standpoint integrated environmental and economic accounting should not reduced to the economic integration of environmental factors. Instead of it economy must be a part of the environmental accounting. Integrated environmental and economic accounting should help to identify possible environmentally safe relations between nature and man and reveal the actual disparities. Therefore, the goal is not optimal using of environment for economic purposes, but to achieve optimal balance between human needs and nature`s requirements. It is necessary to ensure tight control over the economic impact of human activities on the environment, such as its condition and changes.

2.5. SITUATION IN EUROPEAN UNION

The European Union has the world's highest environmental standards, developed over many years. According these standards the main priorities were defined: protecting endangered species and habitats and efficient using natural resources. These goals also help the economy by fostering innovation and enterprise. Reducing the amount of used resources in economy boosts the technological level of all processes to make them friendlier for the environment. To fulfil this condition the stress was placed on such areas as:

- biodiversity,
- efficient and wise resources usage,
- water,
- air,
- waste,
- funding greener European Union.

The big problem is decrease of species number. It is reduced each year. EU has introduced a strategy to stop the decline of endangered species and habitats by 2020. According to this strategy the areas where endangered species and habitats exists are included to the Natura 2000 program. This program is a centrepiece of all actions against species extinction. Natura 2000 includes a network of 26 000 protected natural areas covering almost 20% of the bloc's land mass. In these regions economical activity of humans is highly reduced. It allows to preserve natural shape of the environment. That means, these areas are not nature reserves, but rather sites where sustainable human activities can take place without threatening rare and vulnerable species and habitats.

The second big problem is a high level of natural resources usage. High level of industry causes quick natural resources leak. It is necessary to limit the use of limited natural resources. In the other case we will experience the lack of natural resources. It would be very disturbing for the economy. Especially the economy of weaker industry countries not being in EU could suffer because of low technology level that makes it impossible to replace some resources by another.

To avoid a crisis in use of limited natural resources, fundamental changes are needed to economy. As well as law making, the EU helps provide the public education, research and public funding crucial for this.

Other important factor of sustainable economic development is wise water usage. High level of industry and big number of various factories causes high water usage and also big pollution of neighborhood water resources. Effectively protection Europe's shared water resources and ecosystems from pollution, climate change and marine litter require concerted action at EU level.

EU water policy aims to:

- give all Europeans access to sufficient quality water,
- ensure that all water bodies across Europe meet minimum standards of cleanliness,
- preserve vulnerable aquatic environments.

Not less important is preservation the proper air quality. It is an area where the EU has been very active and sets ambitious, cost-effective standards and targets for a number of pollutants, including sulphur dioxide, nitrogen dioxide and oxides of nitrogen,

particulate matter and lead. All these substances emission has to be reduced. A big pressure is put on ecological sources of energy usage. Each power plant has to use certain percentage of bio resources as a fuel. Fully ecological power plants are donated in a way that boosts their developments and causes the new ones creation. Also the special techniques of burning resources are demanded. A lot of techniques allow for reducing nitrogen and sulphur compounds. Especially IT techniques usage allows for continuous burning process controlling and preserves its optimal parameters.

All actions taken by EU make air-quality trends getting better. It is worthy to follow solutions applied in EU.

A very important problem is a big amount of generated waste. Actions taken by EU focus on reduction the amount of waste in the first place. Smaller amount of waste can be simpler disposed. European Union has introduced waste-prevention initiatives, promotes better use of resources and encourages a shift to more sustainable consumption. A very important is a program of waste recycling. EU is calling for improved manufacturing methods and encouraging consumers to demand ecological and recycled products.

2.6. ECONOMICAL PERSPECTIVE

From economic perspective the environment exists for man`s exploitation, especially in terms of achieving the economic benefits. The natural environment must be considered only to the extent that brings benefits to man. Environment should contributes human activities by providing natural resources for economic using and absorbing undesirable waste of economic processes. Natural ecosystems are valuable only when they can be used for recreational purposes or at minerals` producing. Simplified economic point of view seems quite indifferent to disturbed balance in nature and formed threat to extinction of living organisms. For people environment has several functions and the accounting system`s task includes control over the operation of these functions. If the quality of the environmental functions deteriorates, it is necessary to raise the question about adoption of its conservation.

In our opinion, it is necessary to begin synthesizing of ecological and anthropocentric perspective. Exploitation of nature for economic purposes has reached its limit: too much exploitation of some features of the environment causes the damage, because of gains taken from some kinds of its using, rotates as losses for other species of such using. For example, the need of performing the function a reservoir for the reduction (storage) of waste by environment, may conflict with the physiological need of clean air and water. Exploitation of nature has reached the point where people start to damage their own living conditions. So (even anthropocentric perspective) it is necessary to put a question under the propriety of their behaviour, because its life is an integral part of nature. Due to this the concept of sustainable development starts to be increasingly important. Exploitation of natural resources as quick gains must give the way to the concept of long-term preservation of the environment for human needs and for the needs of nature. In our opinion, these considerations should influence to the process of environmental and economic accounting integration. Complex system must be as a result of synthesis, or a compromise between ecological and anthropocentric viewpoints. Eco-

nomics should not be considered as part of the environment, in turn, the environment should not be considered only in terms of its economic.

The purpose of environmental accounting is necessity in monitoring of the environment changes caused by economic activity, and providing of integrated environmental and economic policies on the basis of information base. This goal could be achieved only on condition of possibility to analyse the direct and indirect impact of economic using of the environment to economic activity. We refer to close links between traditional systems of economic accounting (system of national accounts) and a new auxiliary accounting system (a complex system of environmental and economic accounting). Relations between these two informational systems could be used to create economic models that contain not only economic but also environmental variables. Therefore, in our opinion, the integrated accounting system have to help in developing of strategies for sustainable development, which provides a balance between interests of human needs` satisfying and interests of long-term preservation of natural features.

2.7. SUMMARY

The severity of socio-ecological situation of the society`s development leads to a favourable area`s association of scientific knowledge. The tendency of science ecologization is the basis for integration processes in the structure of modern scientific knowledge. The end of twentieth century was the beginning of criteria`s system formation that allows considering of science in environmental context. Inclusion of environmental performance into economy of enterprise makes a possibility of complete picture about entity's activities and provides an opportunity of consciously and deliberately justifying and planning of economic decision-making. The deep understanding of economic background of the processes taking place in society and nature, directly proportional depends on possibility of choosing of the most effective options for implementing productive activities and social behaviour of man. The desire to improve functioning of industrial and social systems based on their impact on environment have to make the research of accounting`s correlation both from economic and environmental sciences. Based on the above thoughts, we can make following conclusions:

- currently developing of ecological system can not be separated from economic. We can speak about single eco-economical system in which the subsystems are ecological and economic systems;
- eco-economical system normally develops in two parts: a) economic interest, b) state (public) regulation. Ignoring of even one of these factors, leads to the destruction of this system;

It is necessary to change the methodological approaches of economic efficiency determining with regard of its impact on the environment. An integrated eco-economical accounting would be introduced at the macro level. According to the last one the adjustment should be made in the main economic indicators of the country due to environmental factors.

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3

Trust forming in the case of implementation of economic interaction in the virtual space

The article describes a research on the influence of the trust factor upon the implementation of economic interaction in the virtual space. The mechanism of forming of reputation and trust and also creation of the image of activity subject in the economic of networks is considered.

3.1. INTRODUCTION AND PROBLEM STATEMENT

Essential changes of the social order and economic relations led to transformation of conditions of creation and functioning of economic mechanisms. Due to the development of information technologies, the considerable transformations of crucial elements of economic system and causal-sequence relations between them took place. The rate of life permanently increases, social and economic changes are respectively accelerated and managing conditions are transformed. In this way the cooperation and fast reaction to environment become possible only under condition of attraction of new technologies of interaction in virtual space which can not function without forming of institute of trust. The trust creates the economic activity, motivates cooperation, forms conditions for accomplishment of the liabilities undertaken, and does possible the operational cooperation of subjects in the economy of networks.

Within the Group of Eight summit in 2000, the Charter of global information society which determines the future of development of humanity was accepted. This document witnesses that is information-communication technologies are one of the most important factors of the society forming in XXI century. Therefore, evolution of the instrument of fast electronic reaction changed the order and interaction principles in the society with the creation of virtual space. The successful use of information technologies turns the organization into the network structure. This aspect opens new qualities which are not inherent in the previous, traditional form of interaction. The essential prize when forming the new relations consists in the improvement of use of all resources of the organization, growth of its flexibility and adaptability to external and internal problems that leads to high-quality and operational decisions and influences competitiveness.

Virtual space can be defined as a tool to do various activities by groups of people or organizations without necessity of being physically in the same place. The most commonly used medium to create virtual space is the Internet. It is a medium where

people access not only information, but also other people [16]. It is possible to discuss, change assets, get information from and give information to people in the virtual space. There exists wide set of tools to perform various operations and deal tasks. Groups of people that come together to virtual space are called "virtual communities". Usually these people are groups having common interests or dealing some business together. The location of the virtual community must be defined. It is important because it establishes the virtual 'place' where the members meet.

Virtual space is a special type of the environment, because people who join in such a place usually do not meet personally. They do not know each other. It is because of the virtual space application. This environment allows joining people being in distance location and gives them tools to realize projects. Thanks to these possibilities it is possible to realize projects by people spread out all over the world. This is also the reason that people participating in such a group usually would have never met personally in real world.

Virtual communities can be implemented technically with usage such tools as [17]:

- Mailing lists – collections of data used to send material to multiple recipients.
- Chat rooms – which are tools to communicate in real time by text messages. These messages are visible to all chat room participants.
- Multiuser domains – similar to chat rooms, but attempt to model physical places as well as face-to-face interaction by using text-based virtual realities that maintain a sense of space by providing 'rooms', 'exits', and other objects.
- Video conferences – tools to connect a multiple places or persons witch voice and video connections. It allows people to see each other and communicate by voice.
- Newsgroups – repositories for messages posted from many users in different locations. Messages can be posted at any time and are stored in a newsgroup. Each newsgroup participant can access all messages any time it is convenient. Some of newsgroups offer mail notification about new messages on a newsgroup. This solution allows for convenient access to messages without necessity of regular newsgroup checking.

Communicating via the Internet and other communication channels is different that people used to. Lack of personal contact results in weaker interpersonal relationships. It demands building relations on a base of trust.

The trust phenomenon was studied based on the philosophy, sociology, political science, psychology, and theory of economic doctrines and economics. The problem of an assessment of trust in the economic was formulated by D. Akerlof [2], Zaman A. [9]], and others. The trust as a factor of economic development was studied by S. Kovi [12], Sukhikh V.V [13]. Among researches of the trust theory it is necessary to mention the works by Fukuyama [14] works, R. Schiller [2], P. Shtompki [15]. The question of transformation of the virtual space and its influence on the society interested A. A. Domrachev [7], O. Zerniskaya, P. Zernitsky [10], and others.

The mentioned works rather narrowly consider a trust factor in economy of networks and do not contain recommendations concerning its forming in the course of interaction between subjects of the economic relations in virtual space.

Unresolved part of a problem. In the economy of networks in the case of active use of virtual space, the development of the relations depends on a capability of world and national economy to provide the trust in the case of interaction of subjects. That

determined a problem of the trust forming in the case of implementation of interaction of subjects agents of the economic relations in the virtual space.

The research purpose is to determine the term "trust" in the today economic environment and determination of the mechanism of its forming in the case of interaction implementation in the virtual space.

3.2. THE TRUST TERM

The essential value of trust is recognized in the global economic space both by theorists and practice experts. Acting as a non-financial (imperceptible) asset, the trust considerably influences the reputation and image both on macro- and microeconomic levels. The today competitive environment assumes not only the development of new technologies and release of quality products, it requires also considerable investment injections in the trademark, brand, a goodwill and the other intangible assets creating reputation of the subject of the economic relations. The economy development at macroeconomic level depends on the trust to the country as to a potential partner in business. So, a rating of economic freedom of Ukraine (Heritage Foundation) (table 3.1) carries it to the countries of "repressive economy".

Positive changes of data testify to the trust growth to Ukraine as to a partner country, however, the mentioned tendencies are not essential, it speaks about the delay in the of development of world economy against the background of the crisis phenomena, and the careful relation of rating agencies to developing countries.

It is difficult to not note that thus, the world community notes essential a quality degradation of democracy in Ukraine that considerably influences the rate of forming of trust to the government and state economy.

The meaning of the term "trust" origins from words "belief, trust, confidence". Sources of these expressions are in Latin as "fido" that means "I trust". Latin "credo" is translated as "I trust" and exactly from here originates crediting. The trust (confidence) is a sociological and psychological category for designation of open, positive relations between the people (parties) reflecting confidence of decency and goodwill of other party from which the principal is in these or those relations.

The trust is category likelihood also is based on knowledge of other party to which trust. Thus, it is expected that the parties which consist in trusting relationships, will observe moral and interaction precepts of law to carry out of the liabilities undertaken.

Accordingly to the Nobel Prize winner George Akerlof, the trust is the behaviour which is beyond a rational approach to decision making. The situation becomes complicated as the rational perception at all does not guarantee rational actions [2]. The high level of trust guarantees a high level of development of economy as in the conditions of creation of positive image and reputation the demand growth is observed that stimulates the further development of economy. The existence of causal–consequence relations between the trust and wealth is noted not for the first time. In work [3], researches were carried out which showed that increase of an index of trust for 1 % at the end of the XX century corresponded the growth of gross domestic product per capita in five years for 659 dollars.

Table 3.1. Position of Ukraine accordingly to the international ratings is developed from [6]

№	Rating	Place of Ukraine in year:			Total number of countries in the ranking in year:		
		2012	2011	2010	2012	2011	2010
1	Doing Business	137	152	149	185	183	183
2	Heritage Foundation	163	164	162	179	179	179
3	Ranking of economic globalization	44	44	44	60	60	60
4	Global Competitive-ness Ranking	73	82	89	144	144	133

If to consider the trust as an economic factor, it is necessary to note that the trust is an integral component of the economic relations that reflects expectations of their participants concerning observance of statutory rules of interaction by them and the liabilities undertaken. Trust in economy is an irrational expectation allowing people to interact without an excessive regimentation and excessive control, accelerating economic processes, promoting unity in achievement of effective objectives. [13]]

Trust researches in the economic field of knowledge showed that at present there is no consensus concerning essence of this concept. Often authors refer "trust" to the economic category, institution or factor. The category expresses genetic features of certain economic events and processes and though it is an abstract theoretical expression, but from our point of view, rather describes relations of production which arise in interaction with development of productive forces, economic events and processes in a material world. The term «economic institution» is used as an element of social structure which characterizes the mechanisms, forms of the organization and regulation of the economic life. Economic institutions are considered as forms of social structures more often. A factor means the essential circumstance in any phenomenon or process. The factor also can be an initial component of something [1]. So, "trust" is more suitable for the definition determination. The trust as a factor operates in information economy in the case of creation of the modern social-economic relations and under condition of their virtualization obtains a huge value.

In our opinion the trust as an interaction factor in the virtual space is an integral component of the economic relations reflecting expectations of their participants concerning observance by them of statutory rules and liabilities in the course of virtual interaction, carries not only national but also cross-border nature in the case of development and implementation of communications in the world IT - society.

3.3. FORMING TRUST RELATIONSHIP

Studies of process of forming of trust relationships in the case of interaction in the virtual space become more complicate due to the interdisciplinary of the study object research and inaccessibility of an empirical material. The trust creation process is considered by such base sciences as: philosophy, sociology, political science, psychology,

economy (Fig. 3.1). In the modern conditions of managing it is necessary to accumulate for further use elaboration each of them.

If to consider the trust from the viewpoint of sociology, it should be perceived as a certain basis on which human relations and social institutions are built. F. Fukuyama saw in the trust the base of benefactor and well-fare. He characterized the trust as arising expectation within a certain community that its members will behave normally and fairly, showing the readiness for mutual assistance accordingly to the commonly accepted regulations, cultural traditions, customs, common ethical values [14]. This author considered the similar behaviour as more effective than the behaviour based on the rational calculation and formal rules which need to be developed, approved, defended permanently in court, and then to provide their observance, including use of means of enforcement measures. Fukuyama comes to the conclusion that the prevalence of mistrust in the society is equivalent to entering of an additional tax on all forms of economic activity from which societies with high trust level [3] are free.

The political science considers the trust as a resource which lack is a catalyst of transformation of a state regime. The trust and its determination as the psychological feeling distinguishing the person as the personality and at the same time measurable and manifested at society level, gives the chance to analyse reaction of mentality on uncertainty and unpredictability, to research process of behaviour culture development which determines trust the level, nature of interaction of people and degree of value of society.

In the sphere of business, trust relations are considered as the capital of organization that reflects the relations between partners, suppliers, customers, consumers and other participants of economic processes.

Studying the structure of trusting relationships (the Figure 3.1), it is necessary to notice that it includes the classification of objects, considering interpersonal, system positions which has inductive or deductive nature, and a priori deductive.

The interpersonal trust is related with the interaction process of two parties, exchange which is built relying on the economic and legal practice of interaction of individuals in society. In the case of this type of interaction the huge importance has a time interval between actions of individuals. In the case of creation of the virtual relations they more often speak about the system trust which is created in the case of interaction of the individual and social group, or several social groups. At this, the question of cultural values and standards of behaviour of groups appears. In the course of economic and political activity, groups are also forced to trust politicians, experts in various fields of knowledge, to producers of the goods, works, services and other agents of virtual interaction. In this case, the trust acts as the catalyst of implementation of any relations, and its shortcoming assumes additional financial investments on the increase of its level.

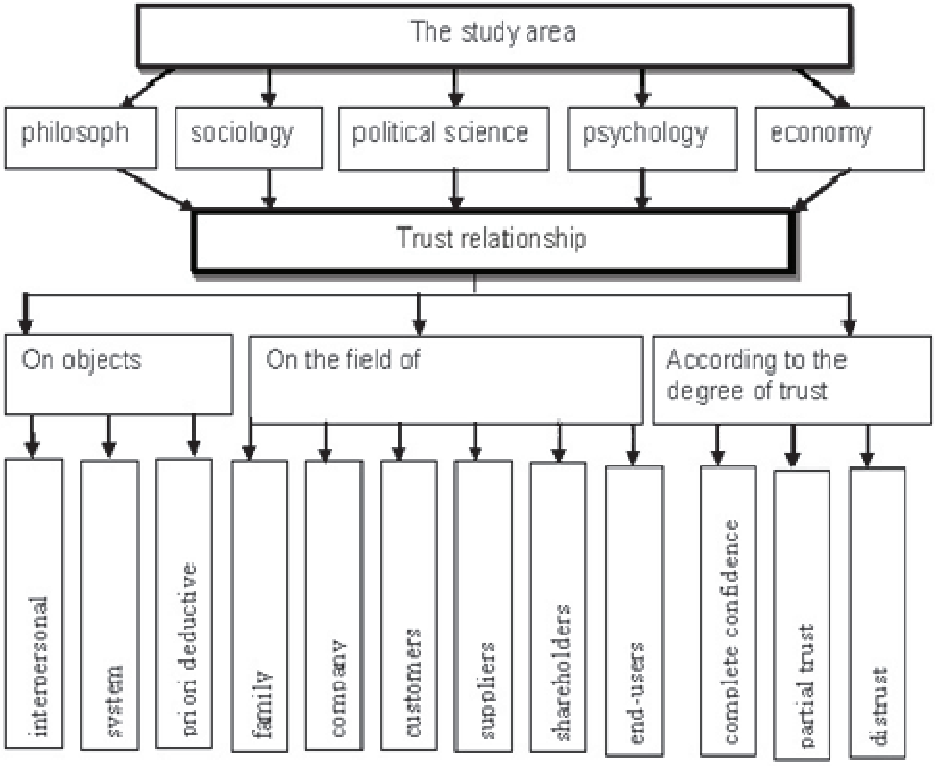

Fig. 3.1. Classification of trust [own work]

What about a priori – deductive trust, it is treatise as the trust to abstract systems on which the modern information economy is based. The need of its creation is connected with universal distribution of electronic types of economic activity. The main ways of forming of similar trusting relationships are: simplification of access to the necessary market information, firms, goods, content; ensuring transparency and openness of virtual interaction with public authorities; provision of possibility to organize effective business activity on the basis of technologies of electronic business, including the use of possibilities of the Internet on the promotion of goods, works, services, implementation of electronic commerce.

The classification of trust relationships concerning the sphere of their origin assumes trust at the levels of family, company (firm), customers, suppliers, shareholders and final consumers of products, goods, works, services. The classification by this attributes is not top-priority in this research, its only specifies the sphere of emergence of trust relationships and gives the chance to match the specific methods of trust forming for various agents of the economic relations.

The question of the assessment of trust rose not once in works of various scientists – economists. Today, there is no the universal technique of the trust assessment that puts

this question as requiring further research. There is the trust assessment through measurement of efficiency of business activity [12] where the author places emphasis for the speeds and costs. The animator of trust accounts public polls. The trust in this model acts as a forecast indicator of future expenses [2]. They determine a set of trust indexes which are considered at the international level and account macroeconomic indicators of countries [6]. In this work, we provided the generalized classification on trust levels which does not give a possibility to determine the economic effect of investments in information channels of impact on the objects and the subject of business. The offered classification of trust degree is intended only for the acceptance of general decision concerning possibility of creation of trust relationships between agents.

It is necessary to note also, that the factors exists which are essentially influencing trust forming. They can be divided into three groups: regulatory, exogenous (external) and endogenous (internal). As a result of action of these factors, the economic mechanisms which are developed in the society are destructed or are significantly transformed. The mentioned factors influence the trust forming in the case of implementation of virtual interaction.

Today, the value of the companies is determined by their capability to creation and maintenance of the high level of trust to themselves. The development of trust have to act as the art of harmonization and finding of tasks and reference points of cooperation around which institutions of the trust creation and maintenance [13] will be developed.

Accordingly to the authors' treatise, the trust arises in the course of interaction in the virtual space between subjects of the economic relations. The organizational-economic mechanism of trust forming in the virtual space is shown in the figure 3.2. The mutual advantages and reciprocity of trust feeling are basic elements of its creation. Trust forming is inseparably linked with its objects (subjects).

The appearance of trust between the partners in business, business and consumer, business and power institutions, power institutions, power institutions and final consumers of goods, works, services in the information space has the same sources. In the case of implementation of similar information interaction it is necessary to allocate only certain channels of receipt of information which will depend more on agents of trusting relationships. So, for example, trust forming between the producer and the consumer of end product in the virtual space generally is based on information received through advertising in a network and on television. Thus, the share of information received through official sites, forums and blogs actively grows. In the conditions of development of the modern society the share of mass media in the total amount of information on which the final consumer is oriented.

The virtual interaction with consumers solves a number of problems of the seller or the producer of goods, works, services:

- enables to represent the enterprise and its goods most effectively;
- enables to create a favourable image;
- on the basis of analytical data and statistical information about site attendance, solves strategic problems of development;
- enables to establish feedback with final buyers of products, works, services by means of a forum, e-mail, phone, fax;

- helps to correct in the current plan the existing strategic tasks accordingly to changes of consumer tastes and preferences and so on.

In the case of use of the supposed mechanism, the subjects of interaction in the virtual space will obtain a number of benefits:

- will cut considerably the expenses and transactional expenses;
- accelerate all processes;
- will reduce risks of nonfulfillment of the obligations undertaken;
- will increase the level and dynamics of management of the organization, the enterprise, the firm;
- will obtain the additional possibilities on attraction of investments for implementation of new projects;
- will have an opportunity of collection and handling of information about rather innovative products and services in the market, with the subsequent transformation of an existing sustainability strategy;
- will analyse a possibility of additional attraction of investments about use of a capital stock and tools of the stock market at the expense of obtaining of information on the new scientific developments, the received patents for the inventions, useful models, industrial designs;
- will increase a probability of receipt of offers concerning implementation of patent, authors' rights, means of individualization of products.

The creation of a modular set of network services based on the information – marketing network will give a opportunity to carry out a virtual interaction by means of electronic exchange of information and carrying out electronic paperless transactions, using possibilities of the Internet and mobile communication. Thus, using the corresponding modern developments in the field of the software, it is easy to prove that placed information is the intellectual property of the user, to establish the personal responsibility for provision of obviously false information, to confirm primacy of its placement. Except everything listed higher, the interaction virtualization in the case of high degree of trust of agents of the economic relations considerably increases speed of their reaction to brought and internal factors, allowing to make quickly any changes without prior notice.

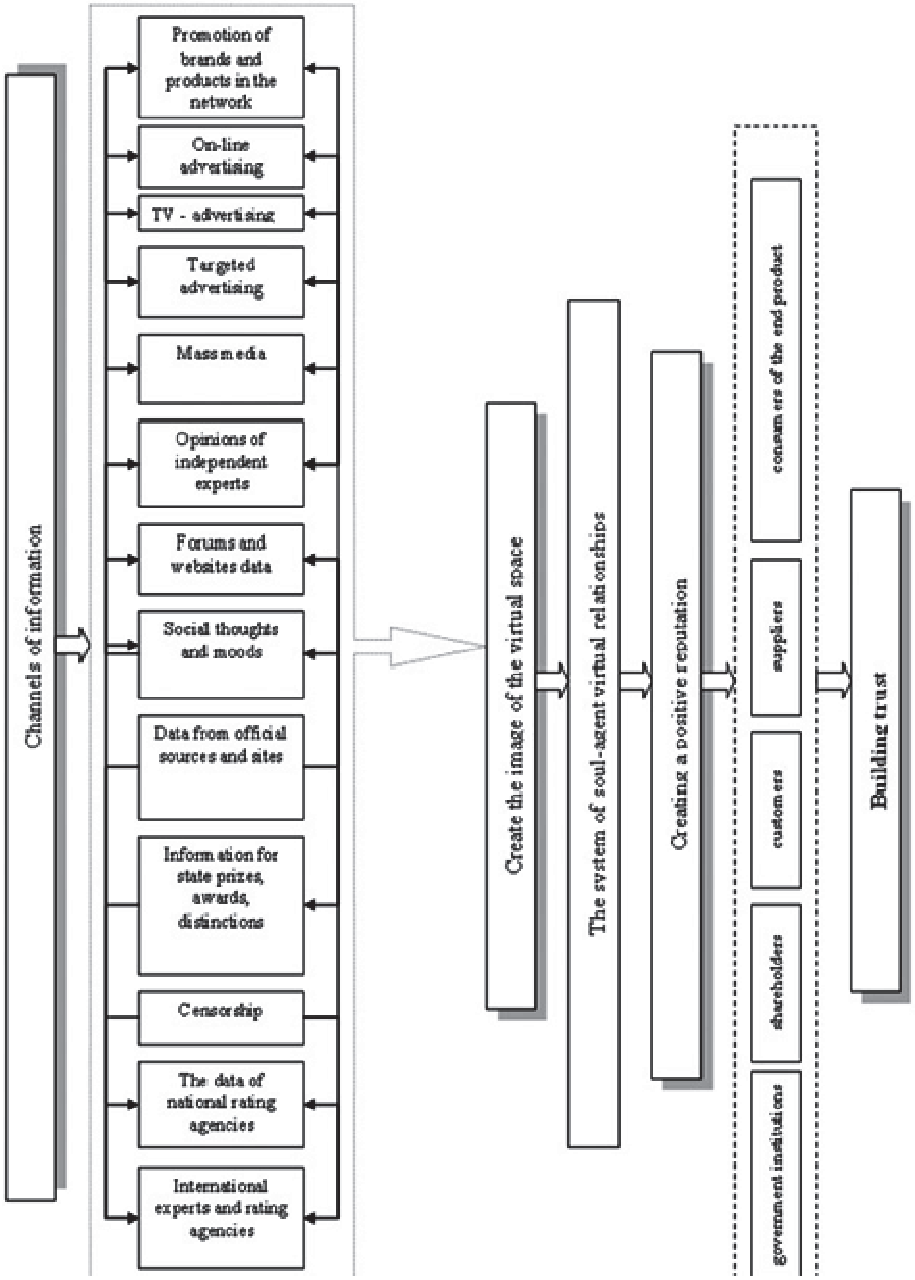

Fig. 3.2. Organizational-economic mechanism of trust forming in the virtual space [own work]

In the case of sale of this mechanism instruments of control and coercion of any third party are absolutely not obligatory. Implementation process of products, works, services by means of the virtual networks, based on trust, does not require additional costs for the lease, salary of sellers, protection, collectors and so on. The process of interaction based on trust in the virtual space cuts down expenses of suppliers, customers, institutions of the power, shareholders and final consumer. Trusting the acquired information, the consumer does the order through the network, the seller, trusting the customer, sends the courier if the goods of the corresponding quality and the buyer has to it no claims, payment is performed on a place through the same courier, or on-line, using technologies for business and electronic commerce. Thus, the economy of time of the buyer and the seller on delivery and payment of the goods, works, services has huge value. The provision of the financial reporting in the electronic form entered included firmly into life of the Ukrainian entrepreneurs. Carrying out on-line conferences in the case of decision making in the course of functioning of the organizations increases the mobility and speed of reaction to change of a goods market situation, works, services.

In the case of above stated positive tendencies it is necessary to remember that in the conditions of information space unification it will be necessary to consider also the international requirements to creation of the relations in the course of virtual interaction, however, as of today this process is not complete and requires additional researches.

3.4. SUMMARY

Analysis told above, it is possible to draw the following conclusions and to formulate recommendations:

1. In the conditions of interaction in the virtual space against background of permanent economic, political and social changes, the trust becomes result of the purposeful actions directed on the implementation and support of trust institutions in the economy and society.
2. Long-term development of the subjects of economic relations in the modern world is determined by a possibility of their adaptation to dynamic changes which occur in the endogenous and exogenous environment. The level of development of the markets does not give a possibility to provide essential benefits only at the expense of material and financial factors, doing them public. A competitive advantage becomes a consequence of effective use of unique by their factors such as trust, reputation and image.
3. Accordingly to the international rating agencies, Ukraine has an image of country with considerable natural-resource potential, however not favourable conditions for economy, rather high level of the corruption, difficult taxation system and not stable legislation that is complicated by a difficult economic situation, low level of growth of gross domestic product and the actual fall of population incomes at the expense of inflationary tendencies. Under existing conditions, the trust forming to Ukraine and its government becomes one of the main questions of its development.
4. Against the background of universal financial crisis which produces a crisis of confidence, forming of positive image of Ukraine becomes possible only under condi-

tion of interaction of subjects of activities taking into account possibilities of economy of networks and transition to virtual cooperation.

5. Implementation of the mechanism of trust forming supposed in this work in the case of implementation of economic interaction will enable to involve information channels of impact that will allow for improving image of the state, government and national companies in the virtual space. The development of the virtual types of economic activity will lead to considerable economy of time and costs of all participants of trust relationships.

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4

Creation model for strategic planning information of using bank transfer pricing method

4.1. INTRODUCTION

The article analyzes the creation of an information model for building a transfer pricing system as an element of management accounting in multibranch bank. Analysis of existing software and the ability to use them depending on the size of the bank was given. Also the expediency of the use of transfer pricing in the strategic planning of the bank was presented.

4.2. A DESCRIPTION OF THE PROBLEM

Increased competition in the market of banking services requires from bank managers the use of new methods of management, development and implementation of effective solutions in the area of strategic management.

As one of the basic types of the bank's strategy in the literature is considered divisionalized strategy (regional, product), which is aimed at adapting loan-investment and deposit-accumulating strategy depending on the characteristics of the region, a specific product or a designated circle of customers. One of the tasks posed by the managers is to increase the bank's market share in all segments of the financial market and optimize its infrastructure (opening branches in new regions and closing the unprofitable ones).

Therefore, one of the strategic goals of the bank is to expand sales channels of banking products and services through the creation of a regional network of branches.

In this case, the bank must have a tool that allows formulating strategic goals for branches and the calculation of their expected performance.

One of the elements of such tool is management accounting, the aim of which is the effective management of the bank, increasing profitability.

Therefore, the creation of a management accounting system, and developing or deploying software allowing to use this system efficiently, in the bank is an objective necessity, resulting from the need for the information needed to make management decisions. Most banks use in their business management accounting methods.

However, the implementation of management accounting system at the bank is relatively long and complicated process, which in simple terms includes:

1. creating a data warehouse;
2. implementation of the transfer pricing method;
3. implementation of cost allocation methods;
4. creating a set of analytical reports to analyze the efficiency of the bank's business lines, products, employees etc.

The diagram of base accounting system is presented at figure 4.1.

Due to the above, management of the bank need to select a solution to create a management accounting system. At the same time, in most cases, this decision must not only create opportunities for retrospective analysis of the current situation for some time in the past, but also allow extrapolation for the future, give the analytical tools to build scenarios and to present managers of alternative proposals for the operation of the bank and its business units in the short or long term. It should be built in the form of computer software, allowing users to flexibly select and filter historical data, and preferably to visualize them to be more appealing and easier to understand – and eventually for formulating conclusions.

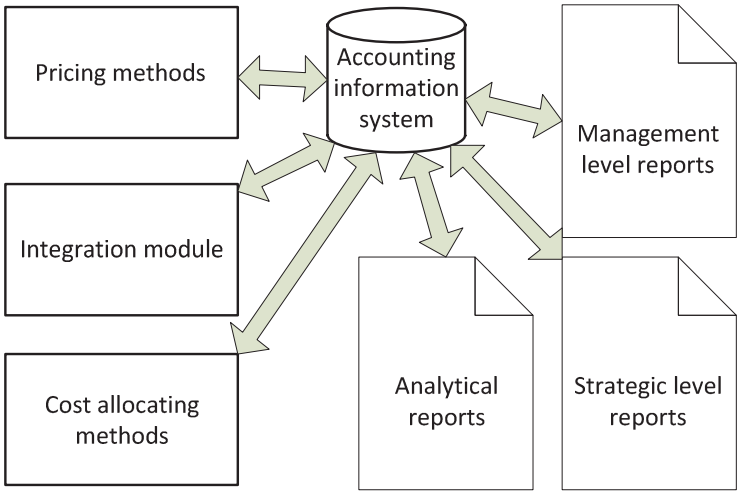

Fig. 4.1. Accounting system diagram [own work]

4.3. ANALYSIS OF THE LATEST RESEARCH AND PUBLICATIONS

A number of Ukrainian and foreign scientists argue that the use of management accounting system (including transfer pricing) not only provides a current analysis of the bank's operations, but it is also an important tool for planning both short and long-term.

Among other things, O. Kravchenko [7] finds that the modern accounting system in banks should not only report the operations results in past periods, but also allow management to make decisions regarding the ongoing operations and growth perspectives.

O. Semenyuta and O. Shevtsova [10] argue that the transfer pricing system in multibranch bank is a part of the strategic financial management of the bank, which aims

to realize a competitive advantage in the financial markets while maintaining stability and maneuverability.

T. Savchenko [9] says that the transfer pricing method is often used to create a system of budgeting and planning. I. Bikbov [3] indicates that one of the most difficult problems in the bank's profit management with an extensive branch network is to develop methods for evaluating the effectiveness of their operations, which would ensure the objectivity of the results and would focus on motivating to achieve the strategic goal of the bank.

Joseph F. Sinkey [12] indicates that transfer pricing is the most powerful tool for the valuation of the bank, which give to management information to evaluate the effectiveness of the implementation of the strategy development and realization of a business plan and plays an important role in the strategic management and planning of banking.

4.4. UNRESOLVED ISSUES

The results of the latest research and scientific publications indicate that the management accounting system allows the implementation of a new quality of planning and budgeting: it allows developing accurate forecasts of the balance sheet and profit and loss account, support plans and budgets of the objective data that reflect different aspects of their business.

Scientists also agree with the use of the bank's management accounting system and subsystem of transfer pricing during the strategic planning, but at the same time draw attention to the existence of unsolved problems in its implementation.

Thus, in our view, remains an unsolved problem of bank managers to provide useful solutions for use of management accounting methods (including transfer pricing) in strategic planning activities of branches.

The aim of the study is to create an information model for the practical implementation of the strategic planning of the results of the branches of the bank with the use of transfer pricing methods.

4.5. THE MAIN RESULTS OF THE STUDY

In previous papers [4, 13], the author of this article dealt with the application of transfer pricing methods as a tool to develop a strategy and define how to use a transfer pricing methods in planning processes in multibranch bank.

On today's banking market there is a number of applications that are used to purposes of creation a management accounting. There are, for example, Oracle Financial Services Applications (OFSA), Hyperion Planning, Cognos Performance Management Extensity and others.

The purpose of these systems is to provide the bank the possibility of collecting, measuring, recording, storing, processing, and generalizing the information necessary for assessing the profitability and management efficiency of the branches, as well as the creation of an effective system of management reporting, which can be used to provide

managers at all levels with data needed to make decisions in a short time, or long time for the high level of management.
For example, the Oracle OFSA system comprises:

1. Oracle Performance Analyzer, which provides performance management accounting tasks, including cost allocation, profitability analysis of responsibility centers, products and customers;
2. Oracle Transfer Pricing, which provides a calculation of transfer incomes and expenses;
3. Oracle Budget and Planning, which has the necessary set of functions - planning "top-down" and "bottom-up", support for multiple versions of the plan, forecast, creation of reports of any cross-section and depth;
4. tool for analysis and visualization of Oracle Business Intelligence, which is a set of tools to access information, gives the opportunity to build reports, provides access to reports, etc.

There are also many other Oracle, and 3rd party add-ins along with the OFS range of applications, for giving the management various fields of information, like risk management or profitability information and management, and – what is even more important in today's world – cooperation with other systems via the SOA architecture. Oracle products are one of the most popular, being used in the financial organizations.

The use of these products gives the bank tools and technologies for the analysis and simulation efficiency of development, suitable for use in a banking environment. They allow to solve a number of urgent operational tasks in the field of analytical support in decision making and provide the bank development in this area in a strategic perspective.

It should be noted there is a possibility of a long period of return on investment in these products and the dependence rate of return on the dynamics of the development of the bank. This issue becomes particularly important in small banks, whose investment budgets are very limited, that create difficulties in the implementation of useful solutions for the organization of management accounting. Therefore, many banks used self-developed software for accounting and management reporting analysis. In particular, this applies to the implementation of transfer pricing as part of the management accounting system. Usage of self-developed software may be easier and cheaper in the beginning, and the homebuilt software may be written while having the specific bank's structure and product range in mind, but however requires well trained local IT staff, prepared for developing financial applications. There is also a possibility for a outsourcing creation of a needed software, which may be priced less than deploying the full blown solution.

The author believes that the proposed solution may be useful for small banks, which have a small number of branches, and use their own solutions to calculate the transfer of their operations.

In general terms, the model of management accounting information should include a description of the processes needed to optimize the management in the following areas:

1. Financial management:
    - controlling;
    - transfer pricing;
    - budgeting and planning;
    - reduction in non-operating expenses.

2. Client Management:
    - optimizing cooperation with customers through the analysis of effectiveness;
    - modeling of customer behavior;
    - customer segmentation.
3. Management of operations:
    - management of a sales system;
    - management of product offers;
    - management of distribution channels.
4. Managing the flow of information:
    - control of primary data;
    - create a data warehouse;
    - rationalization of the structure and scope of information for users.

The implementation of the model should include:

1. **Organizational component** - the possible need for changes in the organizational structure of the Bank in order to identify responsibility centers (profit centers and cost centers).
2. **Procedure component** - the need to develop, together with the technical implementation, a set of procedures, describing the conduct of management accounting.
3. **IT component** - the need to ensure the completeness, accuracy and consistency of data in the transaction system, which allows the operation of the management accounting system.

The IT component is crucial to the success of the management accounting. While building the information system, the staff must built a reliable data warehouse and fill it with data from existing systems. The system must be designed in a way to be ready to use by a management staff, so the mentioned data structure and scope of information must be prepared wisely. There is also a need for visually appealing data presentation.

As stated earlier in this article, we will discuss the description of the model, associated with the implementation of transfer pricing.

According to the author, the stages of this element development of the model are:

1. Creating plans to sell products and services for branches of the bank in terms of quantity and value, broken down by maturities and currencies.
2. Calculation of nominal expected profit/costs of such transactions in financial accounting.
3. Forecast of transfer pricing in the planned time horizon according to maturity and currency.
4. Determine the advisability of stimulation to increase their profit margin by selling the products of the bank designated by the bank's priority parameters (maturity, currencies).
5. Determination of income and expenses of transfer units, depending on the volume of sales plans.
6. Forming planned level of management result of the branches as a combination of transfer and the nominal profit.

Steps 1 and 2 are thoroughly studies and described in the literature that is why we believe that they do not need further explanation in this article.

However, the implementation of Stage 3 is related to the need of establishing bank methodological principles of transfer pricing.

Recommendations of the National Bank of Ukraine (NBU), the development of management reporting in banks of Ukraine [8], indicate that the benchmark for determining transfer prices can be a purchase price of the interbank market, the NBU discount rate, interest rates on government bonds in the primary market or secondary etc. At the same time, according to the recommendations of the NBU, the best method of transfer pricing method is based on market rates.

Most of the operations to obtain funds and issue loans to customers in the Ukrainian banking system are based on fixed interest rates. Interest rates based on interbank deposit rates (Ukrainian KIBOR – Kyiv Interbank Offered Rate, global LIBOR, EURIBOR) is currently relatively rarely used by Ukrainian banks as a basis for determining the floating interest rates on loans and deposits.

Mostly, these products are offered by banks with foreign capital, because they often acquire floating rate funds from parent companies and invest them on domestic market also in floating rate assets with own additional fixed margin.

In a way, on the current situation has impact implementation by NBU so-called Ukrainian Index of retail deposits (UIRD, indicative rates, calculated on the basis of nominal interest rates on term deposits of individuals, offered in the 20 largest in sum of retail deposit portfolio of Ukrainian banks) – some banks have started selling the products, the interest rates of which is floating and calculated using UIRD.

Based on the above, we assume that for the purpose of creating a model of transfer pricing calculation will be based on:

- publication of NBU KIBOR rates and UIRD indexes;
- information of commercial banks about interest rates on loans and deposits;
- analytical reports prepared by audit firms, ranking agencies, bank analysts.

In addition, to determine the forecast of the changes in the level of transfer prices in the planning period, we will use:

- the expected rate of inflation;
- forecast the exchange rate of the hryvnia to the foreign currencies (USD, EUR);
- forecast of interbank deposit rates LIBOR, EURIBOR;
- interest rates on government securities;
- the level of reserve funds in the bank account of the NBU;
- the level of interest rates in the interbank market;
- planned level of nominal interest rates on loans and deposits of the bank in the next financial year.

Thus, the forecast of transfer price for the branch in the time i (t = 1, ..., i, ..., n) and in currency j can be determined by formula 1:

$$P_{ij}^{'} = \frac{(V_{1j} - \sum_{t=1}^{i} S_{tj}) * P_{1j} + \sum_{t=1}^{i} B_{tj} * P_{ij}}{V_{1j} - \sum_{t=1}^{i} S_{tj} + \sum_{t=1}^{i} B_{tj}}, \quad (1),$$

where:

V_{1j} – current level of operations portfolio in currency j at the planned period beginning;

P_{1j} – current transfer price in currency j at the beginning of a planned period;

P_{ij} – planned transfer price of the currency j in the time i;

S_{tj} – planned payments of portfolios of loans and deposits within the planned period;

B_{tj} – planned increase the portfolio of loans and deposits within the planned period.

In step 4, the bank takes into account the weightings to create priorities for dates and currencies in which they are to be collected and invested funds.

Priorities should be set by the Asset and Liability Committee (ALCO), depending on the strategic and operational objectives of the bank, the level of liquidity, the availability of funds to lending. Therefore, transfer rate in some term groups / or certain currency may be different as of the market. This is reflecting the bank's interest in obtaining or allocating resources on those terms and currencies, or, the lack of such interest.

Result of the implementation stages 5 and 6 is calculation the performance of the branches on the basis of forecast sales volumes and expected levels of nominal and transfer interest rates.

4.6. SUMMARY

The strategic task facing the regional network of banking institutions is the implementation of the overall development strategy of the bank, which helps to effective business development and a greater presence in different regions. Using to this goal a transfer pricing method allows the formulation of an objective and comparative evaluation of the forecast performance of the network. In addition, strategic management accounting, conducted by the bank with the transfer pricing method allows forecasting the results of business segments (corporate, retail, investment).

According to the author, the article proposed information model which allows the calculation of the planned management result of the branches of the bank and make both immediate and strategic management decisions in determining priorities and stimulate to increase sales efficiency.

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5

Formation of IT-Employment in the competitive labor market system

The article deals with the impact of information and communication technologies on the labor market. An assessment of the level of IT-employment has been conducted for Ukraine and OECD countries. IT- employment is seen as a factor contributing to the overall competitiveness of the economy. The author analyzes the experience of different countries in the support of IT- education and IT- employment and shows how the IT-sphere develops in Ukraine.

5.1. INTRODUCTION

The information revolution, which includes the communication revolution, creates the material basis for the development of remote forms of communication, training and employment. There are shifts towards greater use of information, intellectual factors; Internet is changing the traditional economic situation. Internet has emerged as a way of combining different computers via telephone network, and now it connects billions of users around the world, wherever they are, both through mobile and a stationary device. Ukrainian scientist A. Kolot notes that the economic resource comprising a totality and combination of information, knowledge, intelligence, and innovations is so important that can be rightly called a strategic one, and the future belongs to it [3, p. 36].

5.2. ANALYSIS OF THE PROBLEM

Information and communication technologies (ICT) are becoming a vital engine of the development of the world economy, which raises the role of the education, because, to manage the information infrastructure, a high level of expertise is needed, which, in turn, leads to certain changes on the labor market. Information technologies per se do not cause unemployment, even if they clearly reduce working hours per unit of output, but, the information paradigm changes the types of workplaces, their quantity, quality and nature of work [2, p. 218]. Technological innovation is a factor rather speeding up the trends already present on the labor market than creating them. The research by German scientists shows that, in the short term, unskilled jobs are likely to be forced out, although increased productivity will create more workplaces in the long term [9].

5.3. THE STATE OF CURRENT RESEARCH

In the foreign economic science, the problem of employment related to information and communication technologies has received considerable attention. A number of foreign researchers (J. Billsberry, M. Castells, A. Kalleberg, J. Laubacher, T. Malone, J. Nilles, D. Pink, Y. Ruiz, A. Shevchuk, D. Strebkov, D. Tapscott, A. Walling, L. Wilks, J. Williams) dedicated their works to the analysis of telecommuting.

Among the Ukrainian scientists, theoretical and applied aspects of employment problems were investigated in the works by Z. Varnaliy, V. Gerasimchuk, E. Grishnova, A. Kalina, A. Kolot, E. Libanova, S. Mochernyy, I. Petrova, V. Petiukh, and in the researches on information society and "new economy" conducted by V. Bazilevich, O. Gavrilyuk, A. Galchinsky, V. Heyets, B. Kovtunets, V. Mishchenko and other scientists. In the works of the above mentioned authors, the development of information and communication technologies is considered from the position of the general impact on the economy and labor market. However, today, the development of ICT has reached a new level, which leads to significant changes in the structure of employment and emergence of new forms of employment.

5.4. THE IMPACT OF ICT ON THE EMPLOYMENT

The aim of the present article is to investigate the impact of ICT on the employment; special attention is given to IT-employment, which is considered as a factor increasing the economic competitiveness.

The development of ICT, the Internet and, as a result, e-business and e-commerce has led to significant changes in the business environment and, in particular, in the methods and technologies of business and trade, and to the emergence of the contemporary forms of employment. Labour reallocation is an important driver of productivity growth, insofar as less productive firms tend to destroy more jobs and more productive ones create more jobs. The Internet changes the way of live, providing a wider choice of digital goods and services, offering lower prices, better information etc. According to estimations by European economists, from 2008 to 2011, the cost of ICT services decreased by 30 %, with those for the fixed broadband Internet services being the greatest decline (average prices felt by 75 %). While, in the developed economies, the prices have stabilized and the rates of decline remain double digit [4, p. 11].

Approximately 70 % of the OECD population has access to the high-speed Internet with increasingly higher speed and lower price. Companies are actively using Internet in their work. Thus, while in 2003, less than four out of ten companies in the EU-15 had a broadband access, by 2009 this figure grew up to nine out of ten companies. In late 2011, almost all the companies in OECD countries were connected to the Internet. In two-thirds of OECD countries, more than 95 % of companies are using Internet, and only a small part of the smallest companies are not connected to it. In 2010, only 5.7 % of small companies (10 – 49 employees) in the EU-25 didn't have access to Internet [8, p. 14]. Informal micro-enterprises with fewer than five employees are unlikely to have access to computers or to need Web-based services or information. Most likely,

they are less interested in business skills training or marketing, but more interested in the basics of what to buy and sell and how to get finance. Meanwhile, enterprises of 10 – 15 employees with computers are more likely to have growth-related needs – such as learning how to expand their markets, learning new business skills, and upgrading their ICT skills. Many of the challenges and constraints facing enterprises are associated with a need to make markets work better, to make internal management systems more efficient, to facilitate improved access to information and other resources, to enhance transparency, and to make environments more enabling. These are all domains in which the effective application of ICTs can make a significant difference. An increasing proportion of companies' turnover accounts for e-commerce, and IT-employment is developing.

The size and composition of the ICT sector vary a great deal. OECD experts are using two definitions of IT-employment. One of them is the "narrow" definition, which includes experts in the field of ICT, whose work focuses on ICT, such as software development and data processing services. The other ("broad") definition refers to the employees who regularly use ICT as part of their profession, but whose work does not focus on ICT, such as researchers or office workers. The "broad" definition, in addition to IT professionals includes employees with professional IT competence engaged in other economic activities. [6]

Statistics provided by the Ukraine' population survey on economic activities give the possibility to select indicators related only to the "narrow" definition of IT-employment, while the development of appropriate indicators for the "broad" definition is the subject of further research.

According to the author's calculations based on data provided by the State Statistics Service of Ukraine, in 2011, the total number of workers employed in the field of information technologies is estimated at 288.8 thousand people. According to the information by the State Statistic Service, in 2011, the total number of economically active population of Ukraine averaged 20 324.2 thousand people. Thus, the total number of people employed in the IT field is 1.42 % of all workers, which is a very low value. In Sweden, for example, in 2010, the corresponding figure amounted to 5.43 %, in Switzerland – 5.04 %, in Czech Republic – 4.74 %, and in Russia – 1.47 % (Figure 5.1).

In OECD countries, employment in ICT constitutes up to 5 % of total, while the part of IT professionals not related to the ICT sector accounts for over 20 % of all workers. Reflecting the high capital-intensity and reliance on skilled labour in many ICT-related activities, the ICT sector generally accounts for larger shares of value added than of employment. For example, while it employs only about 3 per cent of Brazil's business workforce, it represents more than 12 per cent of the total Brazilian business sector value added. The ICT sector's contribution to value-added is more than twice its share of business employment also in economies such as Chile, Estonia, Kazakhstan, Latvia, the Republic of Korea and Romania.

The low share of IT workers in Ukraine's employment structure is explained by the low level of technological development of the domestic economy. As a result, the economy of our country is not competitive. Therefore there exists an urgent need to raise the part of IT professionals in total employment.

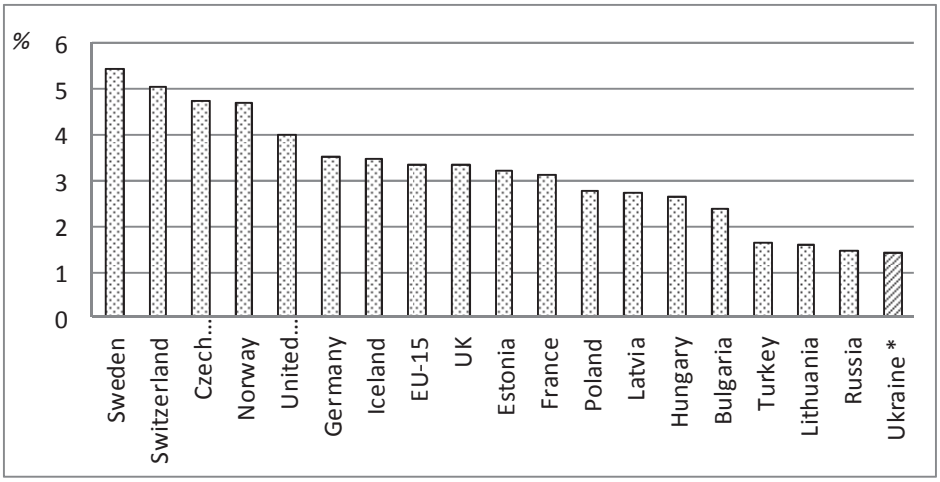

Fig. 5.1. Share of IT specialists in total employment in selected countries in 2010
*2011 data [own work]

Among the experts in the field of ICT in OECD countries, the women still account for a comparatively low share (almost 20 %). Women are much less engaged in the ICT sector and account for a smaller share of IT professionals than men, but their share in the IT employment has been increasing in most countries. In 2010, the proportion of women working as professionals in the field of ICT in various countries was more than 18%. Estonia and Hungary are the leaders among the OECD countries, where women make up more than 40 % of all employees in the ICT sector. The share of female ICT professionals is high in the United States (almost 25 %) followed by Iceland, Finland and Hungary (more than 18 % in each). However, the values for Turkey, Luxembourg and Austria are the lowest among OECD countries. [7] In Ukraine, among ICT experts, the proportion of women is low amounting to 21.9 % (Figure 5.2), which is close to the OECD average. To date, insufficient program or policy attention has been given to the application of ICT tools in existing or new initiatives supporting women entrepreneurs. This seems to be an untapped potential. ICTs should be used as an enabling tool that enhances the effectiveness of existing initiatives. Most women-owned micro- and small enterprises in developing countries have limited skills and training, which constrains their choice of business activities, as well as their ability to meet the needs of their business, their lack of basic education, coupled with time constraints, results in situations whereby even those who are motivated and entrepreneurial are trapped in informal economic activities, lacking the resources and training to grow.

The most important factor in the competitiveness of the ICT sector is the quality of education and the workforce skills. Distribution of IT workers in Ukraine by gender and level of education in 2011 is presented illustrated in Figure 5.2.

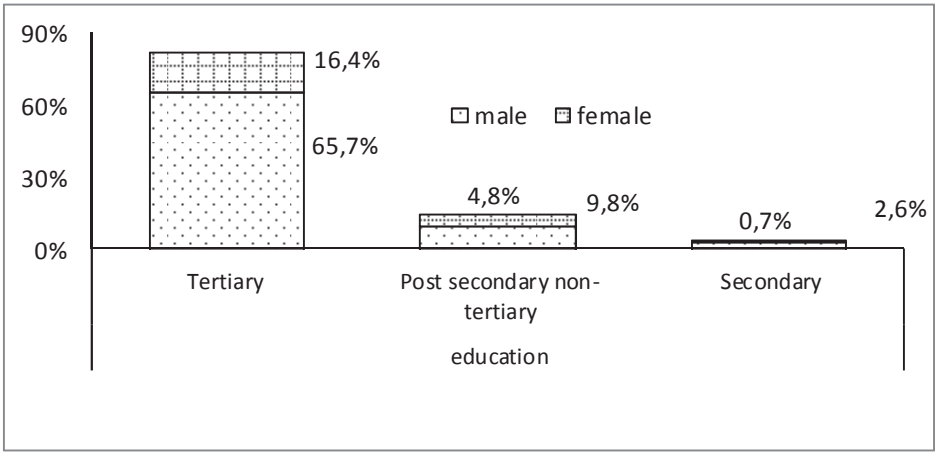

Fig. 5.2. IT specialists by gender and educational level in Ukraine, 2011[own work]

The most qualified specialists are working in the information sector. Thus, in 2011, the share of IT workers with full higher education in the Ukrainian labor market amounted to 82.1 % and 14.6 % of IT professionals had basic or undergraduate education, while only 3.3 % did not have higher education. Specialists of ICT sphere are necessary for the effective operation of enterprises in all economic sectors. Government have to increase the level of technical education and training in order to create a high-skilled workforce for the information technology industry, and provide a stable regulatory and enabling environment to attract business process outsourcing contracts and promote call centers. That is why the government's support of education and employment in the ICT sector should be a priority of social and economic development.

An important issue is the quality of education and the correspondence of the skills and knowledge acquired in higher education institutions to the employers' requirements for IT professionals. A research conducted by the Open University (OU) [10] among 81 British students studying the specialty "Information Technology Management for Business" shows that 51 % of students consider technical skills least important for an IT career as compared to 45 % who think that communication and teamwork skills are the most useful. According to the survey data, 43 % of employers reported the absence of suitable candidates for IT and telecommunications vacancies due to lack of knowledge of business, business process analysis and design, project and program management. The survey also showed that 85 % of students felt ready to work in IT, but only 50 % of employers believe that IT graduates had sufficient skills for their vacancies. Today, the universities should make effort for young talented people to acquire proper technical and business skills required to ensure success in the IT sector.

Specialists of the research firm Economist Intelligence Unit [5] have reported IT sector competitive index, which includes not only the corresponding technological infrastructure and specialists, but also an adequate public support. They have made a conclusion that, presently, the full support of the ICT sector is only provided in the United

States, Japan, South Korea and the UK, where the most favorable conditions for improving the competitiveness of the industry have been created.

The rating is led by the United States prevailing by the size and quality of the development of those segments, which help raise the competitiveness of the IT industry. The list features the countries of the Asia-Pacific Region: the top five leading countries include Japan, South Korea and Australia, while the UK leads the list of European countries followed by Sweden and Denmark.

The research has shown that today Ukraine is already a popular destination for outsourcing of the software development, primarily due to the public system of higher education. Very many technological changes take place every day making it necessary for the professionals to support them.

The global economic crisis has greatly changed the economic situation so it is difficult to accurately predict the terms and paces of the post-crisis renewal and the crisis' structural impact on the economy as a whole. The ICT labor market remains under the pressure of the financial crisis, but the revival of IT employment has been much faster than in the economy as a whole, which leads to the increase of IT employment in 2010 and 2011 years.

In OECD countries, employment has been growing in the sector, so, in 2011, more than 14 million employees worked in the leading companies, which is by 6 % more than in 2010. Among the leading ICT companies, the best rates of income and employment have been attained by the online enterprises [8, p. 36].

In Ukraine, the IT market is growing and will continue to grow. In this context, the demand for IT professionals will be as high as before. According to analysts, in 2012, Ukraine's IT market will expand by 15-20%, which is much less than the 30 percent increase in 2011 [1, p. 1]. This is caused by the second wave of the crisis on the international market. Overall, the situation on the labor market in 2012 is expected to be stable for IT professionals. The high demand is explained by the following two factors: first, the emergence of new IT technologies, and secondly, the specialists of large companies often operate not only for the domestic market but also for foreign customers.

A number of countries are adapting their legislation to e-business in order to remove barriers to online services and provide legal certainty for business and citizens. In Ukraine, the domestic support of IT market should be legally consolidated so Ukrainian scientists, engineers and programmers can remain working in their own country instead of traveling abroad. Thus, in order to support the domestic IT market, on May 24, 2012, the deputies of the Verkhovna Rada of Ukraine approved, after the second hearing and in general, respectively the laws #8267 and #9744, which stipulate the introduction of benefits for companies engaged in the software sector. The draft law #8267 defines the procedure of an "economic experiment", according to which various IT-companies (participants of the experiment) will receive, till 2016, the following benefits: a single contribution to the state social insurance fund for them is set at 36.76 % of two minimum wages, for the employees, the single contribution equals 3.6 % of two minimum wages, corporate tax is set at 16 % (currently 21 %), and income tax for those employed in the industry including non-residents at 10 % (at the moment – 15 %).

The draft law #9744 stipulates a 5 % tax rate for software developers on the tax base consisting of incomes in the form of wages and other benefits under the employ-

ment agreements (contracts) with employees engaged in software companies (or their branches, departments and other subdivisions). At the moment, the corresponding tax rate is 15 %. In addition, the draft provides to exempt IT workers from VAT. For the time of tax breaks, a 16 % corporate tax is set.

5.5. SUMMARY

ICT has a pervasive impact on the labor market. One of the most important externalities is a new mode of organization of production and consumption, which results in cost-saving transactions and faster and better communication between economic agents. The rapid pace of innovation in the ICT sector itself has considerably reduced the costs of access to ICTs. The development of ICT leads to new services in the form of e-commerce, e-finance, e-government, and so forth. These new services can contribute to greater economic efficiency. However, other challenges may arise concerning questions of security of these new e-services generate. ICT requires skills, and education and training are ever more important in building a knowledge economy in which ICT represents an indispensable tool. ICT has given rise to new models of sharing knowledge and collective production of ideas and innovations, which often bypass the proprietary system provided by intellectual property rights. These models, whether in activities such as open source software, open innovations or common knowledge associations, have become very widespread and are promising in terms of the rapid diffusion of knowledge.

Thus, the support of IT sector, which paves the way for improving the competitiveness of the economy, and that of IT employment, which is the core of the innovative development of the labor market should be set as top priorities of the state socio-economic policy. The government needs to work with both public institutions and private sector to create an investment climate and business environment, which would encourage the use of ICT in private firms and in state-owned enterprises. The potential of ICT can be realized through adequate infrastructure and skills, in order to foster efficient labor market.

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6

Informational vector of food security

6.1. ANNOTATION

The indicator of openness of the economy has been analyzed. The interrelation between informational and food security was considered; an approach which takes into account the realities of the country with an open economy was proposed to define the criteria of food security. Informational aspects of food security as well as features of the institutions which are responsible for this condition were defined.

6.2. THE STATE OF THE AGRICULTURAL SECTOR

Despite the significant achievements of the Ukrainian agricultural sector in recent years, domestic food market is characterized by significant price indices volatility. Individual commodity items undergo frequent shocks (soaring prices of buckwheat, sugar, meat, potatoes, etc.). The frequency with which these phenomena occur indicates in the first instance the systemic causes which undermine the health of food market and some of its properties in particular and consequently contribute to the instability of the price indices for individual products, regardless of their origin (either import or domestic production).

Ukraine has been a country with an open economy for a long time (the arithmetic mean of exports and imports is a significant share of GDP), therefore the issue of food security should be viewed through the perspective of the global food market, which means the growing significance of the information component of food security.

The share of exports in GDP is a common indicator of the economic openness. However, in recent years the arithmetic average of the share of exports and imports in GDP is frequently used as the indicator which reflects the rates of both exports and imports. Ukraine has been characterized by a significant degree of openness of the economy since 1996 which reached up to 55-60 per cent within several years (Figure 6.1)[5]. However, the contribution of the agricultural sector to the total exports of the country is not significant (it is less than 10 per cent of the total exports) and cannot fundamentally influence the balance of trade improvement.

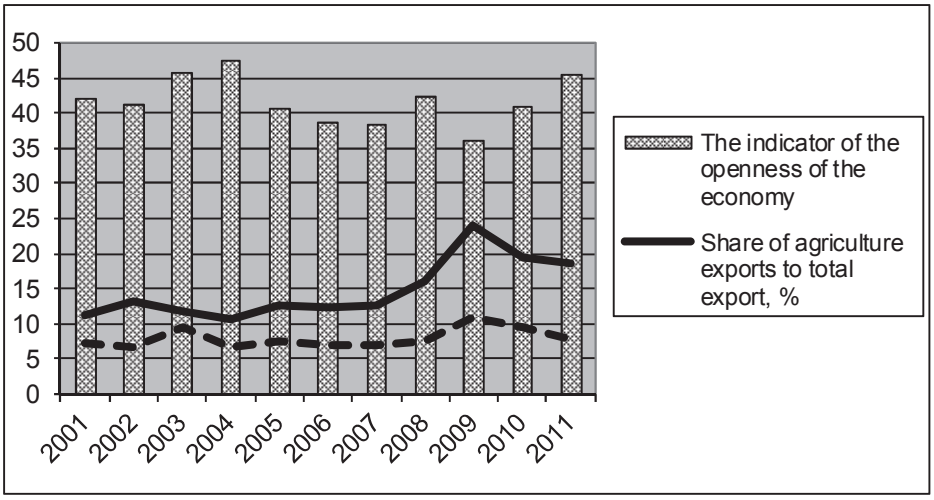

Fig. 6.1 The indicator of the openness of the Ukrainian economy and the contribution of the agricultural sector [own work]

In recent years the trade balance of the country has declined. Since 2006 imports tended to exceed exports significantly (Figure 6.2), which at that time was compensated by the flow of speculative capital and therefore the country's current account balance remained positive [10].

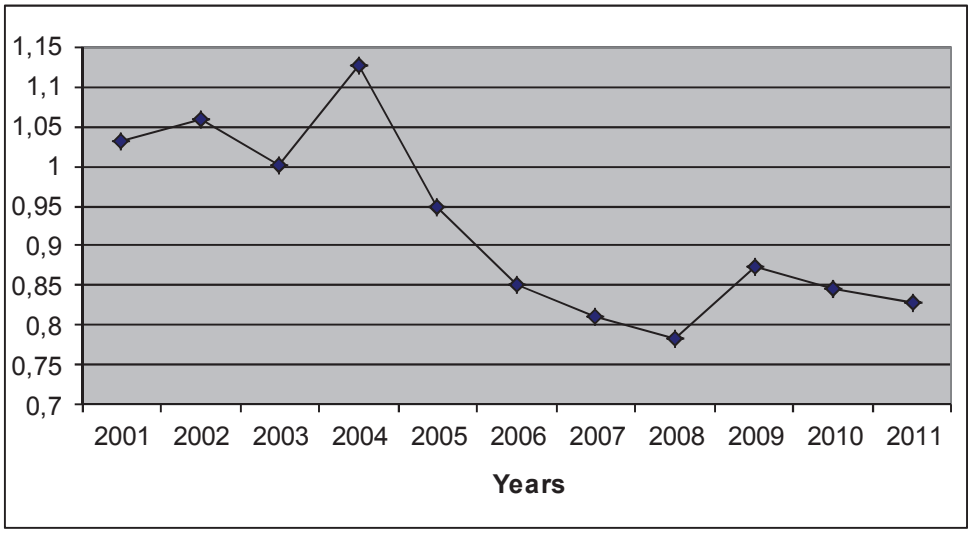

Fig. 6.2. Exports-imports ratio in Ukraine in 1996-2011[own work]

6.3. THE FOOD SECURITY

Food security is the socio-economic and environmental condition under which all social and demographic groups of the population are provided with safe and quality food steadily and reliably as well as in the right quantity and range which are necessary and sufficient for the physical and social development of an individual and for the health of the population of Ukraine [8].

The basic principles for the formation of food security are as follows: the support of interests of Ukraine within the system of international food security in the context of globalization and regional economic integration; the food independence of the state; the economic feasibility of the national needs attributed to providing Ukraine with food products; promptitude of the measures taken for the formation of food security and their adequacy towards real and potential, internal and external threats; physical and economic access to quality and safe food products for all population groups in the amounts which are required for the active and healthy life.

The main tasks in the field of food security are as follows: promotion of the dynamic development of all branches of Ukraine's agricultural sector, maintaining a high level of their competitiveness; introduction of an effective system of soil fertility preservation of the agricultural land; ensuring domestic production of quality and safe food products in the amounts which can guarantee the food security of Ukraine, maintaining the stability of the domestic food market through the formation of the strategic reserves of the basic foods; prevention of the internal and external food security threats and minimization of their negative effects; propaganda of the principles of nutrition among the population; the improvement of the system of the state regulation and management in the field of food security.

Ensuring food security is one of the most important issues of the economy of Ukraine. The investigations of both Ukrainian and foreign researchers testify to its relevance as the priority issue in the agricultural and food policy.

However, Ukrainian and foreign researchers propose different approaches in terms of solving these issues.

In native research papers the issue of food security is considered under the aspect of self-sufficiency [3, 4, 6], therefore it is no coincidence that this approach is reflected in the law „On Food Security" which was not signed by the President of Ukraine [8, 9].

Foreign research works take into account the effects of the optional versions for the development of the global economic processes while considering the possible scenarios for the development of the global food market [1]. One of the possible scenarios is the one in which most countries place stakes on self-sufficiency [2]. It can be deduced that this way does not conform to the optimal distribution of the global resources, and thus can lead to poor consequences for the national economies.

The main enactments which regulate food market of Ukraine and provide its food security are as follows: the Constitution of Ukraine of 28 June 1996 No. 254k/96-VR; CMU Resolution «On the Approval of the State Program of Development of the Ukrainian Village until 2015» of 19 September 2007 No. 11582; Laws of Ukraine «On the Fundamentals of the State Agricultural Policy until 2015» of 18 October 2005 No. 2982-IV; «On the State Support of Agriculture of Ukraine» of 24 June 2004 No. 1877-IV; «On

the Basis of Domestic and Foreign Policy» of 1 July 2010 No. 2411-VI; «On National Security of Ukraine» of 19 June 2003 No. 964-IV; «On Grain and Grain Market in Ukraine» of 04 July 2002 No. 37-IV; «On Protection of National Producers from Dumped Imports» of 22 December 1998 No. 330-XIV; «On Safety and Quality of Food Products» of 23 December 1997 No. 771/97-VR; «On Conformity Assessment» of 17 May 2001 No. 2406-III; draft laws «On Food Security», «On Agriculture» and others.

Assessment of the food security is based on the system of the following indicators:

1) the level of consumption of the food products by the population which is determined by the actual consumption per capita of certain types of food products, the daily energy value of a person's diet, its balance in proteins, fats, carbohydrates, vitamins, macro-and micronutrients;
2) economic accessibility of food products which is determined by the cost of the consumer basket in relation to the level of the average actual wages and / or the share of aggregate food expenditures in the total volume of aggregate household expenditures;
3) physical availability of food products which is determined by the structure of the sources of food in the market, the availability of the retail food network per 10,000 people, the number of trading places in food markets per 10,000 people, the state-of-art of the food products wholesale, the availability and range of the main types of food products in the retail distribution network and in the markets on a given territory;
4) the stability of the food market which is determined by the level of retail and purchase prices of agricultural products based on the normative profitability of their production;
5) the degree of food market independence, which is determined by the share of imported food products in the general structure of their marketing, the level of self-sufficiency according to the main types of food products, the government food reserves volume and the balance of foreign commerce in food products;
6) safety and quality of food products which is defined by the condition of food products as the result of the activities connected with their production and turnover, which are subject to the requirements established by sanitary measures and / or technical regulations and make sure that food products will not cause any harm to human health in case they are consumed for the purpose intended, as well as by the degree of perfection of the properties and characteristics of food products which can satisfy the needs and desires of consumers;
7) the level of development of the agricultural sector which is determined through the assessment of the overall production of certain types of food products, yields of the main crops, livestock and poultry efficiency, the proportion of households in the production of certain agricultural products, the profitability of major food production; financial results of agricultural enterprises and fish farms, food industry and processing of agricultural products, as well as the volume of investing in the agricultural sector, including foreign investment, the level of government support of agricultural producers;

8) natural resources potential and the efficiency of its use which is defined in terms of the agricultural land fertility, including specific areas, the proportion of the degraded land within the overall structure and the level of land cultivation.

The aim of the presented work has been information aspects of provisions of food security and peculiarities of functioning of institutions responsible for this state.

We take into consideration the concept of information security in correlation with issues of food security.

6.4. THE INFORMATION SECURITY

Information security shall be the state of security for vitally important interests of the individual, the society, and the state which shall prevent the causing of damages through: incomplete, untimely and unauthentic information that is being used; negative information impact; negative consequences of using information technologies; unauthorized dissemination and utilization of information, as well as the breach of integrity, confidentiality, accessibility, and availability of information.

It shall be specified that the problem of information security shall be tackled by way of:

- creating a full-function information infrastructure of the state and providing for the protection of its critical elements;
- raising the level of coordination of activities of government bodies with respect to detecting, evaluating and forecasting threats to information security, preventing such threats, and providing for the elimination of their consequences, engaging in international cooperation with respect to such issues;
- improving the regulatory and legislation base with respect to the support for information security; in particular the protection of information resources, computer crimes counteraction, personal details protection as well as enforcement activities in information field.
- developing and elaborating a National System for Confidential Communication as an up-to-date secure transport foundation able to integrate territorial distributed information systems in which the confidential information is being processed [7].

We take into consideration the issues of incompleteness, inopportuneness and inauthenticity of information that is relevant in case of food security implementation. Figure 6.3 depicts the chart of food security implementation under an open economy conditions.

1. Foodstuffs for consumers
2. Foodstuffs of the domestic production
3. Imported foodstuffs
4. Export agrarian output
5. Information currents with respect to the perspectives in agrarian production
6. Information currents with respect to the state of world food market
7. Information currents with respect to the state of the domestic market
8. Information currents with respect to the state of food security
9. Controlling with respect to the agrarian sector
10. Controlling with respect to the domestic market

11. The rate of electorate support of the state policy in agrarian field.
12. Information which is necessary to forecast consumers benefit.

At the current moment, under conditions of deficiency of information-analytical center of the agricultural sector, the information concerning the state of the domestic food market comes to the government (Center for Decision Making) from corresponding department of Ministry of Agrarian Policy and Food of Ukraine. One more organization which accumulates information concerning statistics indices in the agrarian field is the State Statistics Service of Ukraine. Provided that, information of the State Statistics Service of Ukraine in consequence of substantial delay is not able to be used for efficient prognosis.

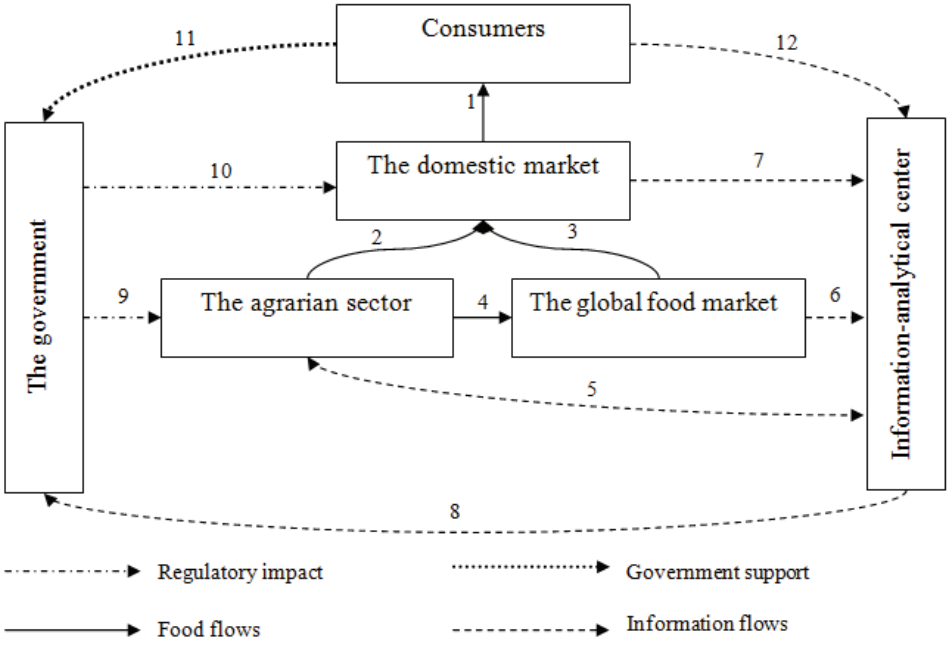

Fig. 6.3.The chart of food security implementation in Ukraine under conditions of an open economy [own work]

As a result, in place of a 6-component chart (figure 6.3) a 3rd component chart (the government, the agrarian sector, the domestic market) functions that is the influence of the world food market and the influence of consumers have been excluded from the chart. The opinions of consumers are not taken into consideration within official statistics as well. Therefore, information signals which are received from the world market have not been accepted by the recipients and the conjuncture alteration of the world market becomes unexpected for leaders in the agrarian field. Moreover, the alteration in consumer sentiment index shall not have an influence upon agrarian field decision making.

In combination with existing institutional complexity of the foreign economic activity (a considerable delay of shipment at the State Customs of Ukraine is widely known) leads to the regular price shock with respect to separate commodity items.

In case of being an information-analytical center within the agrarian sector which shall be responsible for the timeliness and authenticity of information with respect to the current and perspective state of food security, the executive body shall stop accomplishing the function of collecting and analyzing the information.

6.5. THE INFORMATION SECURITY SOFTWARE SYSTEM

For forecasting and detection of threats of food security there is a need of monitoring of food production and general agriculture. This complex monitoring system may be based on mobile devices (smartphones, slate PCs) provided for the state workers. Such devices may use the Global Navigation System (GPS) in the process of measuring individual sectors. Workers may use devices other abilities – cameras, notepads, ink recognition and so on to create a documentation enhanced with the photos taken or owner's comments. Devices need to communicate with the global database. Varying from the mobile technology coverage and signal strength and other factors, these devices may include on-the-air automatic uploading which is probably the fastest way of collecting data, or may include off-line data acquisition techniques and periodical communication with the state database. Such a system would be a great, costly project, and should be distributed for the following years, as it is nearly impossible to create such a database in the short term.

This is probably the most work-effortful element of the system, as it requires to manually visit all possible food production places and elements which may be used in the state food security system and documenting many entities out of them; which may be also variable by years. This causing the process to be continuous, after the first stage of documentation.

There is a possibility of using another technologies, like the satellite imagery for measuring fields, but they still need to be inventoried manually, and there is a need to acquire information how many plants are destroyed or not shipped to the market etc.

The second part of the system is the information processing, systematization and analysis. This requires not only information about food production, but also by food consumption, so this needs to integrate a lot of information from many sources, including food market, and such information may be difficult to acquire from the 3rd parties, wholesalers or private sellers.

If such database is done, the system causes creating a very serious data warehouse. Data warehouses technologies may be used to receive valuable information from the huge sets of pure information, but this requires a third, very important, part of the system – trained experts with knowledge not only in the technology, but also in the field of research, to be able to get information valuable for the state food security.

6.6. CONCLUSION

The principal tasks of the government shall be timely forecasting and detection of threats for food security, minimization of their negative consequences for account of food strategic reserves. Therefore, it is essential to establish:

- a complex monitoring system;
- information acquisition, processing, systematization and analysis system with respect to production, inventory and supply of provisions; quality and security of foodstuffs; foodstuffs consumption and public nourishment

It shall be specified, that the government information resources within food security supply field shall be formed using up-to-date means of communication. Informing of producers timely and rendering of consultancy services shall be organized by the government and consultative services with respect to the government support programs and a scheme of its fulfillment as well as regulation mechanisms of the agricultural production markets.

Nevertheless, the fulfillment of food security regulations is impossible without significant improvement of the standard of information support of the government. Information signals which are received from the world market have not been accepted by the recipients and the conjuncture alteration of the world market becomes unexpected for leaders in the agrarian field.

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7

Development methodology of strategic management intellectualization of systems management an enterprise on the basis of scenario approach

In this article the possible alternative strategic decisions on the development of enterprise management systems are proposed. It is determined that the integrative link between analytical procedures and strategic direction intellectualization management systems are scenarios intellectualization. Interpreting intellectualization as a process that develops over time, in the life cycle management system of enterprises the stage intellectualization is singled out and the aims of its participants are outlined.

Keywords: strategic management, intellectual potential, scenario approach, intellectual capital, intellectualization management systems.

7.1. PROBLEM SETTING

The dynamic development of Ukrainian enterprises under market conditions depends on their level of their competitiveness at the domestic and global markets. Achieving this goal is the creation and implementation of competitive advantages but not material and financial, but rather intellectual – knowledge, training and information technologies. Thus, there is the need to improve the efficiency of enterprise management, along with its competitiveness, which provides tools for improving the adoption of alternative strategic decisions through the intellectualization management. Solution of this problem would be possible when provided by the development of methodological principles of strategic management intellectualization of the management systems at an enterprise.

Developing enterprise strategy has always focused on the formation of its long-term competitive position as well as the intellectual capacity and capital in today's conditions is the key element of the socioeconomic system, so its intellectualization management systems as part of the general strategy of the enterprise development takes special significance.

7.2. ANALYSIS OF THE LATEST RESEARCH AND PUBLICATIONS ON THE ISSUE

The decision of the strategic planning problems, the nature of its technologies, providing methodological tools of strategic management and strategic analysis are examined in their scientific studies by A. Aaker [1], I. Ansoff [2], V. Vasylenko [5], A. Voronkova [6], P. Hordiyenko [7], I. Ihnat'yeva [9], G. Kindratska [12], A. Kuzmin [13], B. Mizyuk [14], O. Prokopenko [16], Z. Shershnyova [19] and others. The authors investigated the nature and the principles of strategic activity, theoretical and methodological approaches to the assessment of intellectual potential of companies within the strategic management of innovative enterprise development; strategic planning technologies and mapping; the concept of strategies and their types; strategic management of the competitive potential of enterprises; conceptual models of strategic management etc.

At the same time, methodological principles and problems at introduction of intellectualization on the current stage of economic development, intellectual capital components formation are reflected in the studies by O. Butnik-Severskyi [4], E. Brooking [3], A. Doronin [8], S. Ishchuk [10], O. Kendyukhov [11], V. Petrenko [15], A. Chukhno [18] and others. The analysis of the related scientific works gives rise to the development of appropriate methodologies and tools of strategic management process of intellectualization systems management, these are not sufficiently investigated in literature.

Formulation of the article's aims. Development of theoretical positions and development of methodological principles of strategic management intellectualization of the systems of management of enterprise on the basis of the scenario approach.

Presentation of the main research results. According to the theoretical interpretation, strategic management is the implementation of the concept, which combines targeted, systemic, situational and integrated approaches to the enterprise, which lets to set the aims of the development, compare them with available capacities and bring them in line with each other by means of developing and implementing a system of strategies [19].

Taking into account, that strategy is not a function of time, but a function of direction [12], to develop a strategy intellectualization of enterprise management systems can not be reduced to the implementation of standardized procedures and diagrams, as with making current decisions. In this situation, the main driving force to develop a strategy should be a symbiosis of knowledge, intuition and professionalism of managers at the institutional level and interests of managers at other levels of management and all employees in achieving the aims of maximizing the intellectual potential of the system.

Adopting the guidelines, tools' planning strategies, rules and logic schemes of the analysis and selection strategy and its implementation, it is important to go the way of thinking from the future to the present and propose a "roadmap for intellectualization" of the current state of the management system to the desired one. Thus, the methodology involves identifying cognitive resources and receiving (production, extraction, achievement) knowledge on intellectualization, this revealing a strategic decision.

Strategic decision to develop a system of management at the industrial enterprise is justified by the deviation of the actual process of state management from the expected state and is made on the basis of comparison of the following conditions of the management system:

- the evaluation of intellectual potential and other resources outlines the current status;
- possibility of forming additional intellectual capital of the predicted future state;
- consideration of such factors as knowledge, training, information, technological, socio-humanistic, competitive and institutional environment which determine the reasonable future status of the company management;
- monitoring the efficiency of management and the dynamics of the market value of the company can justify the desired state.

A transition process from one state of the system of management of enterprise to another one is possible at acceptance of such strategic decisions: adaptation, restructuring, new model, innovation, intellectualization, monitoring of the management efficiency and the dynamics of the market value of the company can justify the desired state (see Figure 7.1). Decisions concerning innovations in management foresee introduction of one or few administrative instruments (controlling the system by customer relations (CRM); segmentation of clients; key jurisdictions; authorizing; reengineering; management; planning of casual scenarios, strategic alliances; Balance scorecard system; strategy of growth; supply chain management; total quality management; benchmarking; precise production; management, loyalty; consumer ethnography; corporate blogs; offshoring and others).

At the same time, trajectory motion to the comprehensive use of intellectual potential (IP) of the system of management of industrial enterprise taking into account the development of a knowledge economy, NTP, institutional environment, competition and accessible financial and intellectual capital (IK) is possible only on the basis of intellectualization, which, in particular, combines property and new model and innovation, intellectual resources can be transferable as, developed, retrained and stored in current status.

Consequently, management decisions about intellectualization enterprise management systems is the result of the strategic planning process and is based on the assessment of the intellectual and other resource potential of the enterprise, is determined by the level of transaction costs, availability of institutional resources and opportunities to attract intellectual capital depends on forecasting knowledge training, and information and technological development.

Because of conception of intellectualization of the systems of management of enterprise [17], it's worth saying that methodology of strategic management intellectualization, primarily, must provide accordance of intellectual potential and other resources of enterprise possibilities which appear in an external environment, justifying forming of jurisdictions of specialists of enterprise and not to contradict institutionalization of intellectual services [20] and theory of development of personality. The noted approach gives a right to use as a hypothesis of scientific research symbiosis of interests of the interested parties in intellectualization of the systems of management of enterprise through the comprehensive opening of intellectual potential of specialist-personality and stimulation of bringing in of intellectual capital in the process of management with subsequent transformation of this capital in capacious intellectual jurisdictions of managers, technology, procedures and management tool.

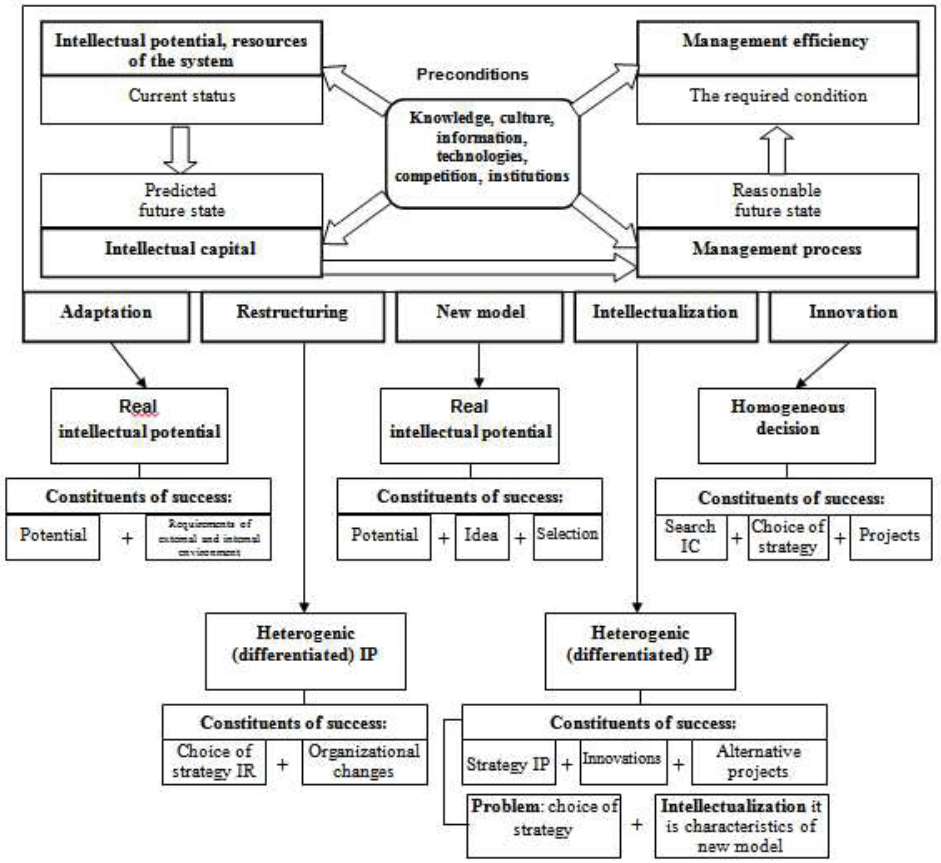

Fig. 7.1. Variants of strategic decisions on the development of management system of enterprise [own work]

Given this, the strategies will be developed not by linear but according to the spatial logic. They can be defined as an agreement of the enterprise and professional intellectuals and other stakeholders that includes quantitative and qualitative formulation of benchmarks conditions of enterprise management, and sequence of intellectualization aims within the given time interval.

The strategic management by the intellectualization management systems of industrial enterprises, in our opinion, is the trajectory of the required current situation, where the starting point is held diagnostics of the management system in terms of defining objectives intellectualization and their comparison with the results of diagnostic environment (especially trends in the scientific progress, trainings, competition, information and institutional environment, the availability of intellectual capital).

Integration between analytical procedures and strategic management intellectualization of the management (in part of working and realization of strategy of intellectual-

ization) systems the scenarios of intellectualization, lines come forward (Figure 7.2) as a vision of that which can be the future of the system of management of industrial enterprise can look.

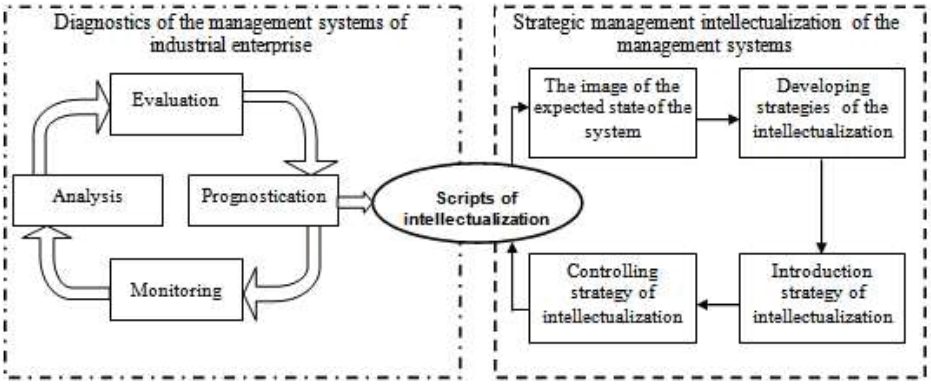

Fig. 7.2. Scenarios as strategic custom intellectualization of the systems of management of industrial enterprise control [own work]

Development of the scenarios' variants of intellectualization management systems includes justification directions of movement and „destinations" despite of certain limitations. Thus, according to one scenario intellectualization its foundation will be some intellectual or professional groups, technology, resource base management system, some will take into account one aspirations and interests of the participants in this spatial development (some trends) and get as a result one option, according to the second scenario would be a basis other groups and their aspirations and interests, technology and resource base (and the second trend, respectively) and eventually get the second option intellectualization, and in the third scenario.

Because such approach will provide various scenarios, during the developing strategies of intellectualization of enterprise management systems it will be important to take into account the strength of force of these countervailing vectors, to determine their effective and the best combination. Here it is worth of examining influence of different factors which will determine the terms of development of strategy (internal, external, indicators, regulators): influence of one factors will provide one scenario, influence of others – the second one. In this context we can talk about the methodology of spatial scenarios development (strategies) of intellectualization of the management systems of the enterprise.

Interpreting intellectualization as process which develops in time (Figure 7.3), it is worth noting the period of intellectualization in the life cycle of the management system. Scenario, actually intellectualization of the systems of management of industrial enterprise is the complex of intellectual measures which are adequate in time, which are which are in causal relationship with each other and ensure implementation of the contents of intellectualization, the development of intellectual potential and comprehensive use of intellectual capital of the management systems by moving them into the configu-

ration of competences intellectual processes, technologies, procedures and tools in management to obtain institutional and competitive advantages.

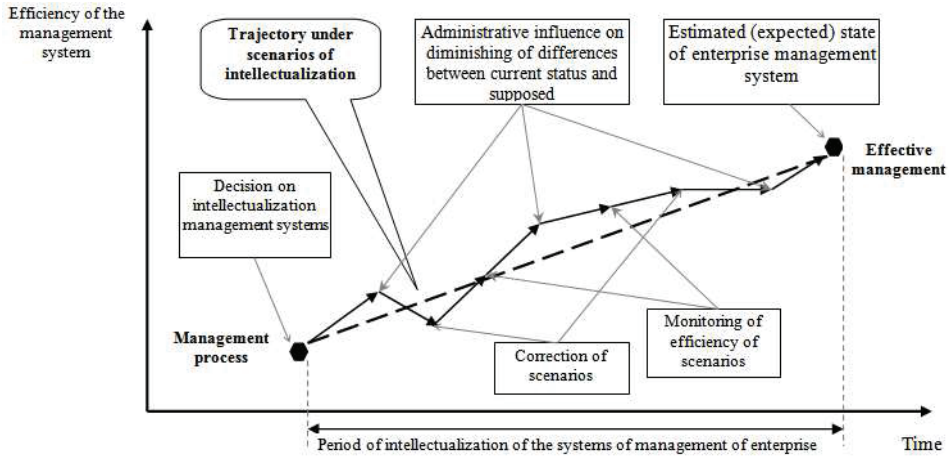

Fig. 7.3. The process of the strategic management intellectualization management systems of industrial enterprises [own work]

Because of influence of the knowledge economy, socio humanistic tendencies, scientific progress, competition, institutes and capital on the processes of intellectualization of the systems of management at enterprises and with the purpose of adequate development of strategy of intellectualization, we suggest to outline the environment of the process participants of intellectualization, namely: state, market, investors, scientifically educational institutions, proprietors, rules, personnel, personalities.

Actually, question of question intellectualization management systems company is one of constituents of management which in its turn is the constituent of human society, and these constituents depend on others (national mentality, systems of education, legal form of enterprise, level of intellectual and production culture, standards of living, public rights and freedoms, proprietary level and others like that). Therefore, actually, the object we are trying to transform is integral, and only in our imagination (as a research object is the enterprise management system) is divided into separate constituents, that are projections, such as an enterprise, management, personality, intellect, education, competence and others like that. Exploring enterprise, for example, within the limits of the three-dimensional system of coordinates, let's make its projection on different axis (which corresponds to system management, intellectual capacity and financial resources). Make a decision to change the management system – one of the projections – namely to move it aside. With this model it becomes clearly, that attaining is possible only in the case of change in space of all of object but other projections will change then. Consequently, it is impossible to move (to change) one projections and leave the other unchanged, leaving without changes exactly an enterprise.

Taking into account it, exactly the transferred participants will determine the levels of efficiency of intellectualization and provide terms, which will allow intellectualization

of the systems of management of enterprise to become effective from positions of the interested parties, lines. At the same time, aims and reasons which will induce each of participants' non-overlapping and forming the unique system of criteria of efficiency of the of management systems intellectualization of industrial enterprise.

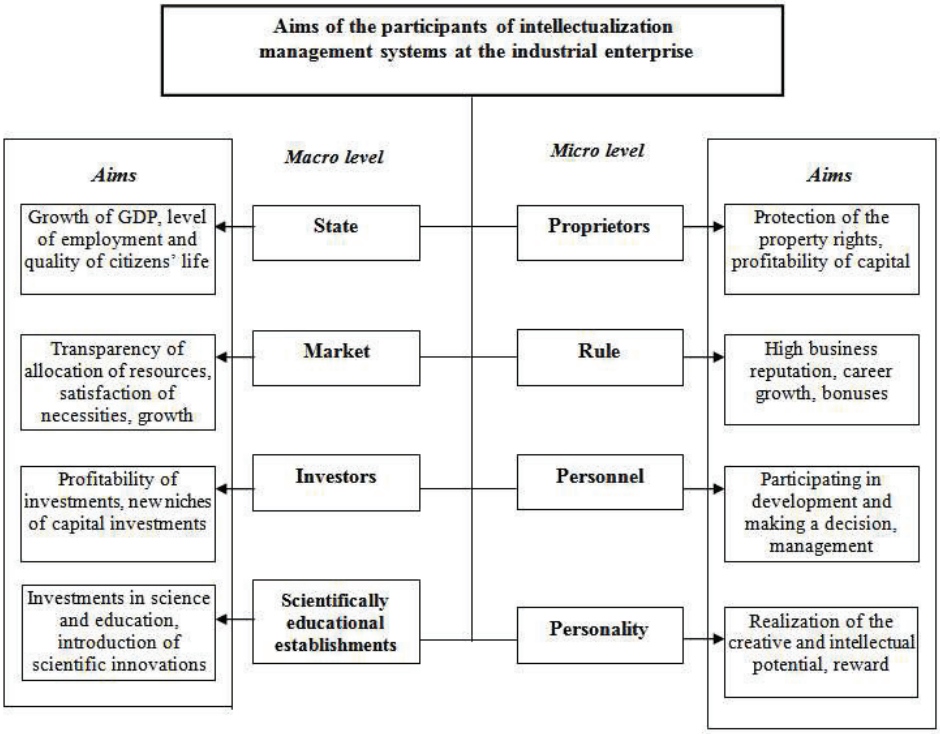

Fig. 7.4. Aims of intellectualization management systems of industrial enterprises [own work]

As says the staff and aims of the participants, figure 7.4, a strategic management intellectualization management systems of industrial enterprise is a difficult object of management and depends on many autonomous (in the legal and administrative understanding) players which have own centers of making a decision. The vectors of their influence are extraordinarily directed, "weight" and synergy of influence on an enterprise is a size dynamic that is why development of strategy of intellectualization in the form of a "travelling card" of intellectualization will guarantee motion in the direction of the set purpose. With that "card" strategic decision as to the intellectualization can be periodically adjusted to emerge possibility managerial maneuver, so you can actually move forward in today's over dynamic and very unstable socioeconomic area with many independent players.

With the purpose of development of scenarios of intellectualization of the systems of management of enterprise, we suggest taking for basis and in future to justify such methodological approaches and possible tool:

- account of the influence of vagueness to which peculiar opening of trends during the certain period of time, when the exposure of factors which can change these trends is possible (a tool is technology of „Forays", scenarios of intellectual knowledge training, economic and informatively technological development of society);
- development of the main scenario, which involves developing strategies intellectualization management system will allow of various factors on the process of intellectualization systems to foresee the aspects of the necessary state of the management system of enterprise taking into account current status its intellectual potential and trends within the scientific progress (a tool is the method of forming of base scenario of intellectualization);
- Consideration of cross-influence of action of different factors on the processes of intellectualization of the management system (current status of intellectual potential of enterprise, scientifically educational and institutional environment, the state of the labor market, market competition and access to investment resources) systems and to define principles on which external and internal motive forces will be able to cooperate with greater efficiency, than their total productivity or draws advantage of one engine (a tool is diagnostics of the property and skilled state of industrial enterprise, method of forming of base scenario of intellectualization, method of forming of computer-integrated scenario of intellectualization);
- unfocusing on a basic scenario, which foresees the strategy development of intellectualization of the management systems recognition terms of one scenario, with a subsequent concordance in relation to other scenarios, to estimate flexibility of strategy or necessity of imposing a restriction (a tool is methods of adjustment and expansion of base scenario of intellectualization);
- providing of alternativeness of constituents is in the process of development of scenarios of intellectualization of the systems of management of industrial enterprise which will allow to form the extended scenario and take into account changes in scenarios depending on the degree of influence of determinatives (a tool is a method of expansion of base scenario of intellectualization);
- multiplicity of scenarios involving the formation of several scenarios based on the allocation set of leading indicators influence on the processes of intellectualization management systems or other factors potentially able to impact on the management system of the enterprise as an object of intellectualization (tools – method of forming the baseline intellectualization, the method of adjusting it and the method of forming an integrated scenario intellectualization).

7.3. MODERN DECISION SUPPORT SYSTEMS

Many factors influence the decision-making. Quantitative and economic factors can be processed in computer systems. Appropriate software providing reliable data has a positive effect on the objective presentation of the situation company. The DSS systems can be very helpful in decision process. A decision support system (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization and help to make decisions, which may be rapidly changing and not easily specified in advance. Decision support systems can be either fully computerized, human or a combination of both. DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions.

The typical information that a decision support application might gather and present includes:

- inventories of information assets as (including legacy and relational data sources, cubes, data warehouses, and data marts),
- comparative sales figures between one period and the next,
- projected revenue figures based on product sales assumptions.

Over the last 10 years has changed the name of the programs supporting the decision. The Executive Information Systems (EIS) transformed to Decision Support Systems (DSS). These one evolved into to Business Intelligence (BI).

The Executive Information Systems programs - management information systems - were usually built to allow managers and heads of companies easy and simple to obtain some information about the condition of their business. In many cases, EIS applications have predefined sets of queries, with a number of parameters set by the user. The result of inquiries were tables or charts. EIS application activity was limited to only those applications that determined the earlier developers. The type of information which provided the EIS usually affected overall sales, the sale of particular products or the number of products sold in the period. Any unusual business questions that require deeper analysis required to use the services of computer science, who wrote the SQL query language and format the response in the form of a report. The Decision Support Systems programs-decision support systems - were among the first generation of software that dynamically generate SQL queries to obtain the information that the user wants to see the DSS. They allow you to effectively extract data from a relational database without having to understand or learn to write SQL scripts. In contrast to the application EIS, DSS may involve a variety of applications, provided that the description is stored in a relational database. In addition, DSS users can ask questions in a wide range of applications in business, and the information-response can easily format more understandable presentations. Questions asked by users of the DSS may involve a much more complex issues than what is offered EIS. And so the DSS application can ask questions such as: How many customers use the services of the company? What is the best selling product? What is the worst-selling product?

The present time the culmination of the evolution of DSS software changes became the first applications of Business Intelligence (BI), These applications provide comprehensive information systems that support decision-making at all levels of business management. These types of applications based on network interfaces allow the user to easily select it interesting data from one or many sources and may involve a number of applications – all there to assist you in deciding the appropriate level of business management. The BI application are: DSS, applications for online processing (OLAP) applications, and applications of statistics to analyze the relationships between the data (data mining – data mining) – correlation of cause and effect, etc. The typical architecture of the Decision Support System consist of three elementary components such as [21,22,23,24,25]:

- database (or knowledge base),
- model (eg., decision-making criteria for the user),
- user interface.

7.4. CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Development of the strategy of enterprise is always directed on forming of its long-term competitive position, and as intellectual potential and capital in the present become the determining element of this socio-economic system, intellectualization of the management systems as constituent of general strategy of the development of enterprise gains a special significance Under such conditions, the main driving force to develop a strategy should be a symbiosis of knowledge, intuition and professionalism of managers institutional level and interest of managers at other levels of management and all employees in achieving the objectives of maximizing the intellectual potential of the system.

An administrative decision about intellectualization of the systems of management of enterprise is the result of process of the strategic planning and based on an evaluation intellectual and other resource potential of enterprise, determined the level of transaction charges, availability of institutional resources and possibilities of bringing in of intellectual capital, depends on prognostication of knowledge training and information and technological development. It is set that the process of strategic management intellectualization of the systems of management of industrial enterprise is the required trajectory of the current situation, where the starting point of diagnostics of the management system is held for the purpose determination of tasks intellectualization and their comparison with the results of diagnostic of external environment.

It is suggested to define the environment of participants of intellectualization process, namely: state, market, investors, academic institutions, owners, rules, staff and individuals. In the future, it is appropriate to develop a baseline for intellectualization management systems on the basis of the outlined methodological approaches and tools.

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8

The role of statistics in economic research

In the article the authors consider the role of statistics in economic research. The use of statistical methods in the estimation of the risks of bank activities is considered more detailed.

8.1. PROBLEM SETTING

The development of modern "economics of science" requires the high rates of science development. The science of all areas must have in equal extent the above mentioned rates. This requires from the society the understanding of the importance of the development of each of them. But the scientists are used to dividing the sciences into 2 groups – fundamental and applied.

In the result of such approach:

1. the scientists-fundamentalists usually interpret applied sciences in the direct understanding of the term "applied"; as the application to the fundamental sciences, but with their own specific object of research;
2. scientists-applicationists over saturate their works with the propositions of the fundamental sciences fearing that otherwise they will not be considered as scientific;
3. practitioners, who use for solving the problem the conclusions and recommendations just of the applied sciences, because of the conglomeration of fundamental terminology can't find the propositions of applied sciences proper, and that is why they take the position of the scientists-fundamentalists (see p.1).

And as a consequence:

1. the scientists-applicationists face with the problems of financing their research in the cases when the received results don't have the enough references on the fundamental sciences, though, as it is known, the suggestions, with can be introduced in practice are made inly according to the results of the applied researches;
2. with the development of the computers the solution of applied tasks is often substituted by making some calculations using a lot of mathematical methods and ways, but without explaining the practical benefit of the received results;
3. inability to determine the practical aim of the scientific research by the most of scientists- fundamentalists, reverts us to the contents of p.2.

8.2. LITERATURE REVIEW

In confirmation of the determined theses it is quite enough to look through the works of the best known scientists in the sphere of the so-called "applied" science – economics. In the modern world the laureates of the Nobel prizes are considered to be such scientists. 65 prizes on economics were awarded, but it is no use going into details of all the works of the laureates. Some generalizations in respect of the biographies of the authors and the form of their scientific publications allow us to make grounded conclusions about the continued "priority of fundamental sciences" (that is – mathematics) while determining the aims and tasks of economics researches.

The first and the main consequence of such approach is the desire of the authors-laureates to substitute in their works the economic terms and concepts by the others. Very often these "new" terms are not understood even by their inventors. But the authority of the famous scientists causes the further occurring usage of such inventions, the sense of which nobody tries to explain. The example of this can be the statement of R.A.C.Frisch, who being the chief editor of the magazine "Econometrics", wrote in 1933 the following: "Econometrics is not the same as economic statistics. And it is not the same that is called economic theory, though the large part of this theory has quantitative character. It is not either the synonym of the usage of mathematics in economics. The experience shows, that each of these three points of view – the point of view of statistics, economic theory and mathematics – is the necessary condition for the right understanding of quantitative relations in the modern economic life, but taken each in isolation is not enough. Only the unification of these three points of view can form the strong method of research".

Such long citation is given here order to show that it is possible to speak much and long, but say nothing if it is nothing to say. R.A.C. Frisch, who is considered to be the author of the main propositions of econometrics, as we see, couldn't give definition of the science. And T.M. Haavelmo, who is called "the father of the modern econometrics", couldn't do it either. He only could write that in his researches he used the approach which he called "the main law of econometrics: the economic theory can be considered viable only after being checked by mathematical and statistical methods". He also writes about "statistical analysis of econometric models", and that he developed "the statistical theory for analyzing dynamic model".

As we can see, the above mentioned authors as many other Nobel laureates on economics, couldn't give the accurate definition and explanation of the aims, methods and results of their researches. In many cases for describing the same events and phenomena they used different notions. For example, for analyzing the economic processes they suggested using such methods of analysis as mathematical, statistical, economic-mathematical, quantitative economic, econometric. And on their basis to build the models with the same name. Without explaining the difference between them.

The reason of this mess in terminology of such famous scientists is quite simple: the most of Nobel laureates of economics were mathematicians by university education and their first scientific interests! But among the laureates on mathematics, physics and chemistry there were no economists!

Nobody doubts about the compliance of the contents of works of the Nobel laureates on economics with the highest scientific demands. But their form is the main argument of the continued antagonism between the fundamentalists and applicationists: if there are few formulas then this research can't be considered as scientific. It is important to say that the same laureates paid attention to the change of role of the science and its results in the modern society. So D.D. Stigler who avoided using mathematics in his works giving preference to simple literary style. That's why he gained general acceptance for accuracy and elegance of exposition and erudition. But he was an economist by education.

Where did the excessive mathematisation of economic and statistical researches lead and continue to lead today? To the necessity, as it was and is with the laureates of the Nobel prizes, of double work: the first – scientific (that is – mathematical) formatting of the results, and then – explaining the kernel of the problem (the role and the significance for practice) and showing the stages of the realization of these results to the practitioners of all levels.

Everything above mentioned concerns statistics, in particular – economic statistics. And the main reason why the most of practitioners interpret statistics not as a science but as a method of analysis is the creation of new "sciences" by way of taking from statistics some of its elements.

First of all the formulas were taken from of statistics and the methods which can be used for receiving these formulas. They were called "mathematical statistics". Having found out that the interpretation of the results of the calculation has probabilistic character, the methods of the probability theory were added and the new "science" was called "the probability theory and mathematical statistics".

The statisticians were upset and in order not to loose the integral part of their science, in their turn sorted out for separate consideration and study "the theory of statistics". The further – the more: "the theory of statistics" was divided into "descriptive" and "analytical". And proceeding from the fact that economic phenomena and processes can be considered both as functional and stochastic the "economic analysis" and "econometrics" were invented. But it was not the end: the economic, demographic, social and the statistics of every branch and type of economic activity, international statistics and so on appeared. Plus "simulation and forecasting" also separated from "Statistics".

As a result, "Economics" doesn't consider the branch statistics to be a science, but only mathematical methods for carrying out its economic calculations. And in the economic universities instead of "Statistics" in the wide scientific sense of this word the subject called "mathematical economics" is taught. Though all the propositions of this subject are built on the usage of statistical indices and statistical methods.

Oversaturation of economic publications with mathematics was inherited by the XXI century from the XIX and XX. In the former times universalism of knowledge and shills was welcomed at all levels not only at the scientific. In the XXI century there is no necessity in this, as the specialization gives better effect then the attempt to know everything and learn everything. And the manager(of any business, territories, any type of economic activity or even country) for making efficient managerial decisions must be able not only to calculate himself, but to define the tasks for those who can analyze, simulate and forecast. But if these 3 "sciences" as in the universities so in scientific

publications suggest considering the economic process from their own point of view then it is very difficult for them to by favorably received be the practitioners.

And it is impossible to change the established during 80 years situation of dividing statistics into parts. But it can be done and must be done. Otherwise in some time the term "statistics" will go out of use among practitioners and it will be transferred from the category of "applied sciences" to the category of "fundamental sciences". But once "The statistics" was created as exclusively "applied science".

In order to strengthen for statistics (and statisticians) the status of the main science for ensuring the efficient management of economics, from our point of view, the statisticians should define and rely in their researches on two basic for each science concepts – the aim and the tasks.

A single science which "branched off" the statistics never lay claim to the object to be researched. And the necessity of using just statistics while researching those "mass phenomena and processes" the system of which is presented by the modern economics of micro-, mezzo- and macro- level doesn't demand special proof. Changes, as compared with the previous by generally accepted, demand to apprehend the aims of the research of these phenomena and processes with the help of statistics. Simply speaking, "What is the benefit from using statistics in management?". "The benefit", in other words "the ultimate result" to the attaining of which the activity of economic subject is directed to, is the increase of profit which is reached by way of higher efficiency of this activity. That means, that the main task of the manager of economic subject in to ensure attaining the indicated aim.

For that it is necessary:

- to estimate the results of the work of the past,
- to compare the extent of the factors influence which caused the reached result,
- taking into account the investments, which the entity can use, to determine the level of these factors on the future,
- using the forecasted level of the factors to calculate the forecast level of the profit,
- to make this calculation in two version – pessimistic and optimistic,
- all the estimations and calculations should be don by the persons assigned as who are responsible for fulfillment of each solution.

It is impossible to make well-grounded decisions on each question without using statistics, which will:

- collect necessary data,
- prepare them for analysis,
- carry out the analysis,
- allow to draw conclusions about what happened in the past,
- prepare an information base for building and correcting the models of subject's activity,
- make forecasting calculation.
- Proceeding from the aims and the tasks of the users of statistics – manager of economic subjects – the aim and the tasks of the statistics for the economics should be defined:

1. the aim – making constant renovation of the information base which ensures making efficient managerial decisions,
2. the tasks – ensuring the answers for the questions:
   - "What happened to the subject?"
   - "Why has it happened?"
   - "What is the extent of participation of certain employees of the subject in what has happened?"
   - "To what extend will financial resources be needed for changing the level of factors?"
   - "What change of the profit can be expected?"

The achievement of the aim and the solution of the above mentioned tasks are ensured by way of carrying out the well-known for statisticians stages of statistic research – statistic observation, data processing and analyzing, formulating the results, simulating and forecasting the process and phenomena. That's why, if in statistical publications along with the statistic terminology to use applied economic terminology then the most of the users – managers and analysts – will easily understand the advantages of the integrated use of one science "Statistics" instead of dozens of its derivations. These advantages will become apparent while formulating the tasks which demand for their solution making special statistic calculations the results of which ensure making efficient managerial decisions.

8.3. BANKING SYSTEM

The complexity of bank system – multiplicity and diversity of bank institutions, and the functions which they perform – cause the creation of large flow of information. The users of this information are bank institutions themselves, their customers and partners in the country and abroad – that is the world financial-economic system.

The need in information is caused by the presence of risks in bank activities and the desire of the participants of the market of bank services to lessen this risk for themselves. A lot of scientists and practical workers dedicated thousands of their works to the estimation of the risks including the risks in bank activities. In all these works the statistical methods are used. But as it is impossible to describe the bank institution, bank operation and the customers of the bank using only 1-2 indices, the proposed by the majority of the authors methods of estimation of the risks are cumbrous and unreliable.

The results of the calculation of the ability of the bank to run across the risk is the determining of the limits as in whole for the portfolio so according to every position separately and the calculations of risk-chances are the premium for risk.

In the world bank practice the calculation of the risks is done from two positions:

- the calculation of the ability of the bank to run across the risk without breaking its financial stableness and reliability;
- the calculation of the risk-chances, which allows to obtain the information as to the expected income of the bank, proceeding from the conditions of taking the responsible risks.

The wave of bank failures in 90s in XX century caused the objective need from the part of the bodies of bank supervision to strengthen their control after the risks. As the main tool of such control Basel Committee for bank supervision in 1995 recommended the central banks of the world to use VaR-methodology for calculating the reserves necessary for covering the possible losses in the result of risk appearance.

The sphere of employment of VaR-methodology is very wide and various. It is used as a tool:

- of inherent monitoring for the risks within the bank;
- of supervision by the central bank for the capital adequacy , necessary
- to cover risks (outward monitoring);
- of making decision as to the expediency of hedging the risk operations (the comparison is done with the help of VaR before the hedge and after it is carried out. If the difference between VaR before and after the hedge is not considerable, then the expediency of the hedging casts doubt.)
- for determining the limits for the dealers of the bank and the control for observance of these limits;
- of the estimation of different bank projects;
- for determining the efficiency of the ways of using the bank capital taking into account the risks;
- for estimating the efficiency of the bank activity as in whole so of each of its branches;
- for motivating the bank dealers, as their reward is defined taking into account the size of the received income from the bank operations carried by them for one unit of VaR.

In comparison with other methods of risk calculation VaR methodology has some advantages:

- the width of use, that means that it is possible to calculate risks for different markets including those for which the high changeability is the characteristic of them, namely the markets of CIS.
- universality - that means that the risk is calculated not only for one position, but in whole for the portfolio of the bank.
- simplicity of the use of the methods that are based on VaR-methodology.
- convenience of giving the information. With the help of one number that has money expression it is possible to estimate the risk quantitatively in the form of the maximum possible potential losses of the bank capital.
- taking into consideration volatility of securities of the market, the value of risk position and the period of its supporting.
- Alongside with the advantages VaR-methodology has some disadvantages, the main of them are:
  - it doesn't secure the accuracy of the obtained result, that leads to the insufficiently correct estimation of the bank risks, as the calculations of VaR are based on the use of the law about the normal distribution of random variables. But in practice it is not always observed.

- it doesn't give information as to the concrete size of bank losses connected with the appearance of risk;
- it is accompanied by rather big financial expenses, as it requires from the staff rather high level of qualification and computerization of bank calculation procedures.

As it is known, for calculating VaR it is necessary to take into account three main components:

1. content and size of the portfolio of the bank (risk position);
2. time period for which it is calculated;
3. the function of the distribution of the parameters of risk (in the case when VaR-portfolio is determined –distribution of its current income)

The researches of the calculation procedures in some banks revealed a number of problems, in particular:

1. calculation of VaR for the investing portfolio of bank is impossible for lack of the market prices for the shares of the most companies;
2. existence of some technical difficulties in calculations, as the content of bank portfolio contains more then ten different financial tools, that leads to the necessity to use the big correlation matrix. And in the conditions of partial automation it is very difficult.

At present the banking system of Ukraine is in the stage of formation. The lack of knowledge and experience as well as corresponding normative demands from the part of the National Bank of Ukraine are the main reasons why the majority of banks don't make the estimation and calculation of risks.

The research of the practice of calculation of bank risks in Ukraine made by us proves that in the most cases the calculation of the ability of the bank to run across the risk is realized by the empiric way, and the calculation of risk-possibilities (chances) is not done at all.

It is caused by the following factors:

First – by the instability of macroeconomic situation in Ukraine, that doesn't allow to create the objective informational base, which would serve as the basis for estimating and calculating the risks, for the prognoses of their appearance and also for determining the limits of their influence on the bank activity.

Second, very low level of methodological and informational providing for calculating bank risks. From the point of view of the level of methodological providing and the gained practical experience as to the estimation and calculation of the risks, the banks of Ukraine can be divided into three groups:

1. The subsidiary institutions of the famous foreign banks. It is necessary to stress that these banks have definite experience as to the calculation of the risks, but their experience was not elucidated in the means of mass media.
2. Big banks. In these banks we can see only the process of formation of the system of risk management with the use of modern tools for calculating these risks. From the whole complex of modern methods of risk calculating (historical simulation, method of Monte-Carlo, test simulation, analytical method and so on) only analytical method is sometimes used.

3. Medium and small banks. The part of these banks constitutes approximately about 86% of their total amount. The specific feature of his group is the lack of methodological, informational and staff providing for carrying out the risk calculation. That's why in these banks the quantitative estimation of risks and their calculation on the basis of VaR-methodology practically is not done.

Third, insufficient level of the development of information technologies in banks, and first of all, software, doesn't allow to automatize completely the process of risk calculation. This keeps back the use of modern approach to risk calculation in Ukraine. The main reason for such situation, from our point of view, is very high cost of software for risk calculation as compared with the obtained profit by the banks of Ukraine, and also insufficient economic advantage from the introduction of calculation procedures as compared with the cost for their elaboration.

The multiregression analysis in some cases allows determining the influence of factors on the generalized estimation of risk. And then the participants of the market of bank services get the possibility to compare the risk and profitableness of definite bank operations and to make the well-grounded choice in favor of the definite bank institution, to fix the grounded cost of the definite bank operation, to define the priority in making the decision concerning the definite bank branch and so on.

That's why the comparison analysis for estimation of the risks of bank operations or participants of the market of bank services, and for choosing the ways of their lessening was widely spread. For modern banking the need in such comparisons is great:

- choosing by the investor the object for investment;
- fixing the individual credit rates by the bank;
- choosing the bank for cooperation by the client;
- estimating the financial conditions of the branches of bank, and so on.

Comparison is being made, of course, simultaneously according to several indices. The main problem is to define the list of indices according to which such comparisons are made. But we don't consider this problem in this article.

Let's consider, that the list of the demanded indices is made, then the problem raises to determine the rank for definite elements of the totality on the basis of these indices. The difficulty is that more often the indices don't allow drawing a simple conclusion: the values of some indices demand to include the element in the "best" group, while the values of others – in the "worst" group.

The generally known solution in this case can be the calculation of multidimensional mean. The methods and peculiarities of its calculation are considered in many scientific publications. But one of the most important questions connected with the grounds of the accuracy of the conclusions received by this way, so far hasn't been described in the applied statistic investigations. We must stress, that just in the applied investigations, because the theory of statistics contains the description of the answer to this question. Unclaiming of the theory by the practice in the given case once more shows the distrust of the economists-analysts to statistics and their inability (and very often – unwillingness) to operate with the precise data.

In this article we consider the kernel of the problem of raising the precision of the comparative analysis and its solution. The banker will say that the choice of the best (worst) branch must be done according to the Profitableness of the assets, which is gen-

eralizing. But he must also take into consideration other indices, the meaning of which form Profitableness of the assets.

For example:

- profits per one employee;
- level of profitableness of the credits;
- number of clients per one employee;
- proportion of interest-bearing income in the total sum.

For calculating multidimensional mean the following formula will be used:

$$\overline{P_i} = \frac{\sum p_{ik} \quad d_k}{k} \tag{9.1},$$

where: p_{ik} – standardized values of original indices; d_k- the weights (the level of influence) of these indices; k - number of indices.

The accuracy of the result is defined first of all by the substantiation of the weights used while calculating $\overline{P_i}$. In practice it is a common to use the opinion of experts.

Insufficient accuracy in determining the weights by the method of expert estimation is caused by the following:

1. the concepts "opinion" and "expert" are not statistical, as there are no generally accepted definition of these concepts;
2. expert can determine the difference between the weights only in the form of conditional "unity", which has not got economic interpretation;
3. if conditions in which the event takes place change the new expert estimation is demanded.

At the same time the theory of statistics offers very simple and easily realized with the help of the computer method of precise determination of the contribution of the share of every factor in the variation of the result.

The coefficient of multiple determinations is determined by the following formula:

$$R^2_{y.12} = \frac{\sum (Y_i - \overline{y})^2}{\sum (y_i - \overline{y})^2} \tag{9.2},$$

where: Y_i theoretical means the indices calculated according to the regression equation.

It is also known, that while learning the correlation, for example, between three variables:

$$Y_i - \overline{y} = b_1(x_1 - \overline{x_1}) + b_2(x_2 - \overline{x_2}), \tag{9.3},$$

where: b_k - the coefficients of regression.

Taking into account the formulas of the calculation of the variances s_1^2 and s_2^2, and also s_{12}, and substitute (9.3) by (9.2) we will receive:

$$R^2_{y.12} = \frac{b_1^2 s_1^2 + 2b_1 b_2 s_{12} + b_2^2 s_2^2}{s_y^2}. \tag{9.4},$$

If we build the equation of regression not according to the original data but according to the standardized:

$$y' = \frac{y - \overline{y}}{s_y}, x'_k = \frac{x_k - \overline{x_k}}{s_k} \quad (9.5),$$

where: s_y and s_k – standardized deviations.

Then in such equation the coefficient of the regression b'_k will correlate with b_k in the following way:

$$b'_k = b_k \frac{s_k}{s_y} \quad (9.6).$$

Then:

$$R^2_{y.12} = (b'_1)^2 + (b'_2)^2 + 2b'_1 b'_2 r_{12}, \quad (9.7),$$

from this:

$$R^2_{y.12} = r_{y1} b'_1 + r_{y2} b'_2 \quad (9.8),$$

and summarizing:

$$R^2_{y12..k} = r_{y1} b'_1 + r_{y2} b'_2 + ... + r_{yk} b'_k \quad (9.9),$$

where r_{yk} – bivariate correlation coefficient.

The sense of (9.9) lies in the following: $R^2_{y12..k}$ - measures the influence of all x_k, r_{yk} - measures the influence of x_k on y including indirect influence of other variables, if these other variables influence x_k, b'_k measures in standardized deviations of y' the "clean" influence of x_k on y.

So, by multiplying r_{yk} by b'_k influence of x_k on y is corrected ("is cleaned" from indirect influence of other factors). It means that r_{yk} b'_k became similar to the partial coefficient of determination, but moreover has its own preferences:

- much easier to calculate;
- always positive;
- has the property of additivity.

Just this last quality allows to use (9.9) for determining weights in calculation of $\overline{P_i}$:

$$d_k = \frac{r_{yk} b'_k}{R^2_{y.12..k}} \quad (9.10).$$

8.4. SUMMARY

With the help of correlation – regression analysis the degree of estimation of the results of the activities of branches using each index separately was defined.

With the help of multidimensional mean their influence was taken into account in one multidimensional index.

Ranking of branches, made with the help allowed of correlation – regression analysis to give the objective comparative estimation of the risks of the activities of the branches and expose those, which in the first turn require the interference of bank top authorities for not allowing the worsening of the situation in the bank in whole.

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9

Information support of natural resources potential in the context of sustainable development

In order to ensure the protection and restoration of the environment, considerate the requirements of sustainable development of the agricultural sector the conceptual approaches for the rational use of natural resources potential of agricultural enterprises have been developed. Proposed the use of a system of indicators in order to obtain reliable information on the overall activities of business entities in the field of environmental protection further reflected in the records of their accounts.

9.1. MAIN ISSUE

In the conditions anthropogenic factors exacerbate the burden of natural resources and national economy oriented to external markets has become impossible to ignore the objective factors such as the finiteness of natural resources, especially non-renewable resources, the sensitivity of the environment for economic activities, ecological resilience and capacity resource-ecological surrounding environment, ecological limits of its resilience to the impact of negative anthropogenic factors, etc.

The mentioned factors require a comprehensive account of the activities of agricultural enterprises, which determines the need to create overall state-level management mechanism witch economic development-oriented information technology, dematerialization, greening of business based on the principles of innovation. The Particular place is issue of security information and analysis afforded by the creation of a system of indicators-signaling social, economic, environmental, and institutional and organizational units providing appropriate information process and the mechanisms of their mutual action through the development of information communication [3].

Creating such security information and analysis is a prerequisite for successful implementation of strategic policy management rational use of natural resources, which is shaped by the interaction of economic and ecological processes, and manifests itself through ecological and economic interests.

9.2. ANALYSIS OF RECENT WORKS AND PUBLICATIONS

Scientific and methodological issues of security information and analysis of sustainable development, information systems development issues in relation to the natural environment on the macro and micro levels as has been described and tested in the following publications: S.I. Bandura, S.M. Bobylowa, O.O. Weklicz, W.M. Gejecia, B.M. Daniliszyna, A.W.Jewdokimowa, I.I. Łukinowa, and many over researchers. At the same time the existing security system sustainable development information and analysis as at the international level and national level so still does not meet contemporary needs which inhibit practical implementation of the concept of sustainable development. In particular, the issues of efficient use of natural resources potential of agricultural enterprises have been reflected in the work: W.G. Andrijczuka, W.W. Bobko, O.A. Buguckiego, I.I. Łukinowa, W.J. Mesl-Weselaka, N.G. Micenka, G.M. Pidliseckiego, J.W. Popowa, W.W. Rossochy, O.W. Rubaj, P.T. Sabłuka and others. Research in the field of environmental issues in the accounting records of companies and the economics of the country engaged in among other: S.I.Doroguncow, Ł.G. Melnym S.A. Podoliński W.P. Rudenko, J.W. Sokoółow, W.O. Szewczuk, I.W. Zamuła and other scientists.

The present conditions are the most current issues of cooperation in the harmonization of society and the natural environment, rational use of natural resources potential, rational in terms of environmental safety economic mechanisms in use of natural resources which are limited.

9.3. OUTSTANDING OF ISSUES

Fundamental trends in the use of natural resources in the regions of Ukraine testify to the fact that the problems of rational use of their potential are not resolved so far.

On the one hand there is a discrepancy between the existing potential of natural resources, and the actual use, on the other hand it is necessary to activate work towards their commitment to the market economy.

It should be emphasized the need to resolve the issue of theoretical and methodological research related to the role and place of the factor in the greening of the information system of economic relations. Separate resolve of issues related to the definition of objectives, functions, and tasks, ecological and economic records in terms of sustainable development [3].

Insufficiently settled issues in the theory are the basis for the development of criteria and content of the information base for decision-making ecologically justified and evaluate their effectiveness.

It is about the need for development of such a system factors (indicators), which on the one hand would cover all spheres of human functioning, on the other hand could be organically included in the traditional systems of information and records.

9.4. PURPOSE AND BASIC RESEARCH

Purpose of the study consists in developing conceptual approach to the management of the potential of rational use of natural resources for agricultural enterprises, which is based on an appropriate reflection of information and analytical processes designed to ensure the protection and sustainability of the natural environment, taking into account the requirements of sustainable development of the agricultural sector.

Crisis state of the environment and the significant deterioration in operating conditions of mankind requires cardinal changes priorities and selection of new strategic directions of development. The concept of sustainable development is a new paradigm of contemporary ecological eco-social policy.

It is regarded as a classic view of sustainable development. It provides the necessary stability and harmonization of human functioning and is characterized by a circle associated with each other factors and aspects: political, legal, economic, ecological, social, information, international, etc. The constant development of complex social-ecological systems and economic is provided by the development and implementation of appropriate economic policies of state [3]. Accordingly, the basic principles of sustainable development are: the principle of ensuring the stability of ecological environment, rational use of the principle of payment of natural resources, the principle of spending alternatives, the principle of using the best available clean technologies, the principle of prevention of environmental degradation, take into account the principle of burden on the environment, principle of access to environmental information.

As emphasized by S. Rassadnykowa, these principles perform a fundamental role in ensuring the sustainable development of complex social systems, ecological and economic. They are interrelated, and at the same time are those which, by taking into account the impact of (reflected) ecological factor on the basis of social relations shape the sustainable development of the country in a broad understanding of the term. [8].

Accordingly, the main task of sustainable development of Ukraine is to provide a dynamic socio-economic growth for environmental protection and rational use of natural resources potential to meet the needs of generations: the present and the future through the creation of the most efficient economic system, which stimulates productive work and scientific progress and technical and is aimed at the public.

The transition of agricultural enterprises on the model of sustainable development, and the continued operation of these principles to ensure balanced growth expected volume of quality and competitive industrial and agricultural production, incurring economic glamor of production, rational use, restoration and protection of natural resources, reduction of destructive environmental impact of economic activities on the environment and a necessary condition for integration into European institutions. This will allow business to expand considerably the movement of goods at the expense of output to external markets.

The basic directions of the management and restoration of natural resource potential should be included [6,7,8]:

- the necessity of develop the system for monitoring the quality of specialized land and soil deposits,

- the necessity of agricultural activities within a reasonable amount for the absorption of ecosystems,
- long term strategies by the effective use of soil fertility management through balanced land management trade,
- the need to select new ways of preventing soil erosion. This allows you to wash and loss of nutritious substances reduced 5-10 times,
- households with a narrow specialization should follow the rules change seeding, and even with a relatively short rotation crops should be considered a strategic crop for the region such as winter or spring wheat, sugar beet, potatoes, corn and others. A detailed list can also be subject to other factors: the specialization of farms, as well as the material-technical base the processing plant, distance from markets,
- securing the full transition to an ecologically sustainable and technologies that protect the soil determine the contours, drainage and the use of the mosaic model of land development,
- it is necessary to implement semi-intensive system of farming with the use of some chemical and biological largely resource-efficient farming methods and resources in an environmentally safe way, and the development of large-scale organic farms,
- conduct an inventory of all regional forests, their ecological status and forest management, the implementation of certification of forest holdings, and all the remaining old-growth forests take protection to give them the status of reserve land,
- initiate the transition to the optimal combination of selective, gradual and continuous process of deforestation,
- conducting work in the restoration of forests: the composition of the optimum design of the natural forest cover of the old structure of forest ecosystems, the reconstruction of secondary forest cover and low value,
- forestation the uncovered trees and clearing of forest sites that were previously arable land or wasteland. Forestation the slopes with a slope of more than 10 degrees,
- should be prohibited cutting bushes on the steep slopes in order to extend the area of arable land intended for haymaking and pasture,
- create a waterproof strips of forest along the banks of the rivers as a structural element of the agricultural landscape which, together with other measures help people to the prevention of soil erosion,
- eroded pastures to reforest and transformed into a meadow,
- should be completely banned plowing, grazing cattle, any building within the coastal bands of protection, and the protection of the coastal zone against undermined them to create a range of stone,
- go from spontaneous use of the rivers for their professional engineering service based on a comprehensive approach to the water reservoir,
- in order to prevent chemical pollution of natural water bodies should ensure reuse of drainage water accumulated. Dampening the waters drained areas makes it possible to restore an average of 1 ha of arable agricultural land of about 20-70 kg of nitrogen, potassium 15-20, 50-150 kg of calcium and 300-400 m3 of water, which serves to increase the fertility of crops.

These recommendations by the sparing approach to natural resource potential allow significant reduction of the negative impact of economic activities and to make restoration of natural resources.

Conflict of interest between economics and ecology due to the fact that economic efficiency and thus the desirability of certain economic activities of modern economics is referred to only in the aspect of the market, while the "good" natural and "services" (air, forests, grasslands, rivers, lakes, oceans), which provides production and consumer values are themselves not have money, because they do not belong to the market values. The modern economy is characterized by a tendency of absorbing such a "free", environmentally clean, consumer values, partially transforming it through technology systems for industrial goods while ruining the environment [1].

The successful results of environmental activities of enterprises which belongs to the agro-industrial complex depend on the continuity of their leadership to take a balanced and consistent decisions, each of which is based on the basis of information and as a result determines the better or worse impact on the environment.

A positive factor in this is the inclusion of environmental activities for system accounting records and controls.

The ideal model schema potential of natural resources-should be built at least one of the following two principles:

1. Natural resources (plant and animal organisms, giving the crop land, water, air, minerals useful) are considered as consumer it means the market value of having the right price, which for renewable resources is adequate to the expenditure on restoring them at the right time, and in relation to resources non-renewable - offset by an irrevocable loss and expenses for the full technological disposal or safe storage of the waste.
2. The level of quality of any technology is not rated by generally accepted today, the criterion of "waste-free". With the amount of waste disposed of even totally should not exceed a value which can be fully absorbed by the environment and ecosystem specific time [4].

Ecological situation in Ukraine is at stake. According to data from the Council for the study of the productive forces of Ukraine NANU part of the area is relatively clean only 7% of the total territory of the country, conditionally clean about 8%. Less polluted areas represent only 15%, polluted and very polluted, respectively 30 and 40% of the total territory of the country.

There is a close relationship between the product and the quality of the environment: the better the quality of the goods (including environmental assessment of the use of waste and the results of operations for the protection of the environment during production), the higher the quality of the environment.

Combating the negative effects of using reasonable standards and norms of the system is a reasonable way to use (comprehensive, economic) resources corresponding to the specifics of the site environmental, ecological oriented activities, planning and justify management decisions, which are manifested in progressive directions, interaction of nature and society, certification environmental working places and the technology [9].

The transition to a modern, progressive techniques and technologies aimed at protecting the environment and natural resources, improve the organization, deployment,

specialization and concentration of agricultural and industrial production will enable the formation of a qualitatively new, ecologically safe, material and technical base, which will provide a high security level of natural resources and eco-friendly country.

However, the project focused on rational use of natural resources and the stabilization and recovery of the environment do not provide the desired effect. The main reasons for this are: the lack of a single comprehensive approach and coordination in solving the above problems, inadequate funding of projects in the field of environmental protection, economic operating mechanism of imperfect use of natural resources, lack of stability in the management of organizational units of the sphere.

The over-exploitation of natural resources distinct types, imperfect forms and methods of their inclusion in the renewal process needs to re-prioritize their use, the development of science punks indicative strategy in the area of natural resources, scientific rationale and mechanisms of action to achieve them.

Research of natural resources and environmental factors of sustainable development planning is carried out from the position of modern rules of economic theory, geographic social, environmental and mathematical and system approach. The analysis of the functioning of the subject of use of natural resources in Ukraine shows that despite some positive developments in the problem of qualitative change of type of use of natural resources in general is inconclusive because the economic model of spending has not changed significantly and continues to be focused on excessive consumption of resources. Present use of natural resources can be characterized as irrational, unsustainable ecologically and exhausting the resources. Much of the financial flows shaped by the potential of the natural resources of Ukraine are not supervised by the government.

One of the directions of the effective use of resources is the inclusion of the savings ratio of resources to the system of economic analysis companies also at the regional level, which allows for increasing production efficiency provisions, the definition of priority directions of economic resources, increased production of glamor in accordance with business plans. The concept of efficiency is based on the rational use of all types of resources, reduced rotational costs, and material and labours [7].

The progressive development of farms in the agricultural sector substantially determines the level of national prosperity. The progress and effectiveness of agricultural production depends on the security of resources and their effective use. At the very important role played by saving resources.

The need to move to a new level of quality use of natural resources is an objective and undeniable prerequisite for increasing the efficiency of social production. Obtaining a reasonable level of exploitation of agricultural production is possible only if the implementation of effective projects in the field of resource efficiency through the use of market leverage, as well as the regulation of the state economy.

The basis for the rational use of resources, management must be part of the conditions under which the efficient consumption of resources, it would be convenient for all business entities, the acquisition and implementation of resource efficiency provisions would be thoroughly stimulated. Environmental awareness is a general condition for the prevention of environmental degradation and protects his property for future generations.

The concept of sustainable development combines three essential components of sustainable development of society: economic, environmental and social. The economic

approach is based on the optimal use of limited resources and the use of natural energy and material saving technology in order to build a global income, to ensure that the behaviour of global capital, with which it is collected. At the same time the transition to the information society raises global structural changes to the nation's capital by increasing the volume of assets flows of finance, information and intellectual property. Already, financial flows are seven times greater than the volume of the flow of material goods. The development of a new "virtual" economy is stimulated not only the deficit of natural resources, but also by the escalation of information and knowledge, they are given a priority to the importance of the goods. From the point of view of ecology, sustainable development should ensure uniformity of physical and biological systems, their lifetime, which determines the stability of the whole biosphere.
In order to analyse and evaluate the potential use of natural resources, the accounts used data from a variety of sectors adjacent. However, this information is generally unsuited to the purposes and it hinders effective management of the work of agricultural enterprises and prevents the settlement of future prospects.

The basic indicators of stability develop the use of natural resources in the agricultural sector, which is characterized by the potential of natural resources may include the following [2, 5] in the table 9.1.

Well, it was developed a system of indicators to determine the status, use and protection of natural resources potential, however, makes it difficult to carry out calculations and much can not always be included in economic terms. There is a need to develop integrated indicators by which you will be able to follow depending on the level of business (industry, region, country) of natural factors and indicators, and their impact and influence of economic activity on the environment. These indicators enable rapid development of information and adapt them for production purposes.

Because effective management of an agricultural enterprise is directly dependent on the information obtained, in particular environmental, suddenly there is a problem to adapt the existing and the development of the original documentation, which allows listing all the processes on natural resources and record data when received. This information will allow assessing the natural factors, their role in the money-commodity relations and carrying out a valuable assessment of the needs of the market economy.

Special importance role innovation indicators by which calculated the inclusion level of investment for the renewal of resources.

Importance of investing in the area of resource utilization is mainly connected with the creation of conditions to come out of the ecological crisis on the path of sustainable development through the achievement of sustainable use of resources, which is aimed at restructuring of economies, the implementation of new technologies, materials, equipment, renewal of production based on resource efficiency and safe development of ecologically, and to ensure the dynamic stability of the biosphere.

Table 9.1. The basic indicators of develop the use of natural resources in the agricultural sector

Economical	Ecological	Social	Innovative
The level of economic development as a result of evaluation of gross domestic product per inhabitant; the level of consumer spending and savings of the population; level of labour productivity, average wages, tax revenue, energy consumption, material consumption, the quantity of consumption of resources, capitalize on investments in the implementation of projects aimed at saving resources, structure, source and volume of financing activities for the savings of resources, financial and economic mechanism of the activity of savings resources; the amount and rate of change in innovation-active enterprises in the sector; implementation of regional problems in the field of resource efficiency; increase in the level of corporate social responsibility agriculture; effective demand of the population;	the level of implementation of projects in the field of saving biodiversity; ecological safety level of biotechnology; the level of use of natural resources of which does not exceed the limits of their natural regeneration; The level economical management load ecosystem; rational level load management and ecosystems; the level of hazardous waste, protection and restoration of land covered by forest; amounts of clean water consumption, preserve the quality indicators, supply of water and protection projects; the level of pollution waste water, disposal of harmful substances in the effluent water, the effectiveness of airspace protection technology, clean drinking water used, the rational use of water resources and land, hard waste, accumulation of toxic industrial waste per one square kilometre; the degree of purification in the equipment control and its measurement, the level of morbidity of the population as a result of environmental pollution, the level of investment and current expenditure on environmental protection, indicators of protection against contamination; dynamics affecting investment in improving and protecting the environment; rate of fertilization with organic fertilizers and mineral land for agricultural sowing; rate of spending on nature conservation, including to carry out projects in the field of saving resources, in total spending in the region; the level of assimilation capacity of natural landscapes;	reduction in mortality in the separate rural areas; increase in the birth rate in rural areas separate; level of development of the social infrastructure; people's access to social goods, a sustainable living, protect and improve the health, working conditions and being of the rural population, unemployment in rural areas; security in the road with asphalt-concrete cover; meet the needs of the population in terms of tillage products, the level and growth rate of population morbidity, including chronic diseases, the existence of toxic industrial waste in terms of a single person; total agricultural output per capita;	level of restoration species use the pure-bred animals on the farm; innovative plant species restoration of agricultural machinery park; technology innovation in the sector; the use of new types of fertilizers, improve facilities feed; saving resources through the implementation of innovative technologies; innovative ways of protecting plants, innovation, production, innovation, administrative decisions

9.5. CONCLUSION

In order to improve companies' security in the area of information about the natural resources potential, a system of indicators was developed. It will allow the connection of processes to identify, assess and communicate environmental and economic information, and allow users to make on the basis of the relevant administrative decisions.

Records of the potential of natural resources should reflect the impact of each company and compare them with ecological standards. Adequate consideration of environmental aspects and to reflect the company's activities in the accounting records of users to protect the information necessary to make optimal decisions, administrative, give them the opportunity in full measure to assess the risk and realize opportunities environmentally conscious management.

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